COMMERCIAL FERTILIZER

CONSOLIDATED WITH THE FERTILIZER GREEN BOOK

Text matter from the Barrett advertisement illustrated below—

Little Man with a Big Problem

THERE IS LESS FARM LAND than ever before in history to support this young American. He depends on an area of productive soil approximately the size of a standard city block to grow almost everything he eats, wears and uses. And his proportionate share of the land will shrink as he grows older.

The vital importance of fertilizer is brought to the attention of millions of Americans by this full-page Barrett advertisement in The Saturday Evening Post, April 12, and Fortune, April.

Today America has only 2¼ acres of cropland per person, as compared to 3¼ acres in 1920. With our population now increasing at the rate of 4,000 people per day, we will have about 1¾ acres of cropland per person in 1975.

For more than 300 years, America supplied the needs of a growing population by opening new land. But this is no longer possible. Virtually all our available productive soil is now in use. Today this soil is supporting 152 million people. How can we make the same land provide the abundant American way of life for an estimated population of 190 million by 1975?

The fertilizer industry and its 50,000 agents and dealers are supplying the best answer to this vital problem. The annual output of commercial fertilizers has been increased 180% as compared to the 1935-39 period. And continuing research has developed better methods and materials to constantly improve the plant food content of fertilizers.

By using millions of tons of commercial fertilizers, along with other progressive agricultural practices, farmers are increasing the crop-producing power of the soil. Average annual production per acre of all the cropland in America is now 37% greater than it was during the 1935-39 period.

Barrett shares substantially in this major contribution to our country's welfare. Barrett is America's leading distributor of Nitrogen, the plant food element in fertilizers that builds proteins and enables crops to make vigorous growth and produce abundant yields.

Barrett* NITROGEN

*Reg. U. S. Pat. Off.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION

AA Quality...

for over 85 years
a symbol of quality
and reliability

Mining phosphate rock at A.A.C. Mines, Pierce, Florida.

principal *AA Quality* products

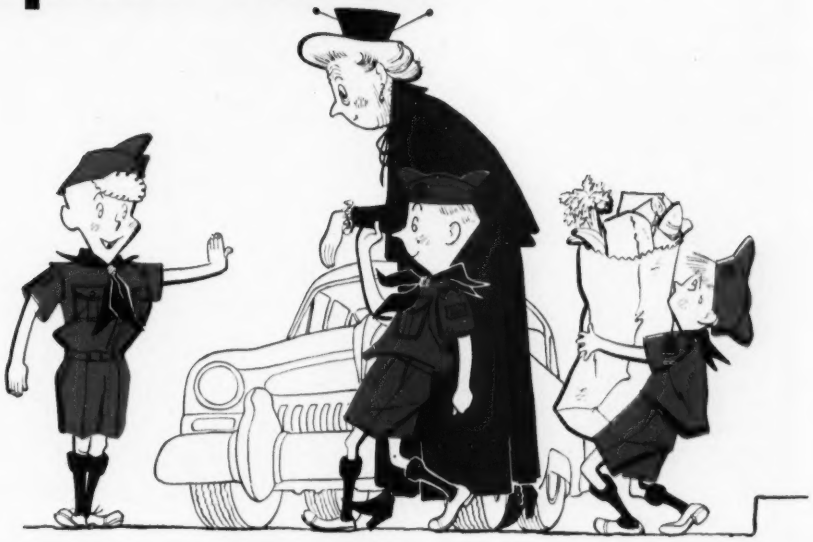
All grades of Florida Pebble Phosphate Rock
AA QUALITY Ground Phosphate Rock
All grades of Commercial Fertilizers
Superphosphate — **Sulphuric Acid**
Insecticides and Fungicides
Phosphoric Acid and Phosphates
Phosphorus and Compounds of Phosphorus
Fluosilicates — **Salt Cake**
Gelatin — **Bone Products**
Ammonium Carbonate

The AMERICAN AGRICULTURAL CHEMICAL Co.

GENERAL OFFICE: 50 CHURCH STREET, NEW YORK 7, N. Y.

30 FACTORIES AND SALES OFFICES, SERVING U. S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

Complete Service



Lion Provides Dependable One-Stop Nitrogen Service for Fertilizer Manufacturers

Lion Nitrogen Fertilizer Materials:

LION ANHYDROUS AMMONIA—Manufactured in Lion's modern plant to an 82.25% nitrogen content under accurate chemical control, the uniformity and high quality of this basic product are assured.

LION AQUA AMMONIA—This product is available to manufacturers for use in the formulation of mixed fertilizers or for sale as direct application material. Normally about 30% ammonia, its content can be controlled by order to suit your needs.

LION NITROGEN FERTILIZER SOLUTIONS—Made specifically for the manufacturing of mixed fertilizers, these products supply both ammonia nitrogen and nitrate nitrogen in the ratios desired. They are easily handled and available in three types designed for varying weather conditions, and for formula requirements in the production of fertilizers that cure rapidly, store well and drill evenly.

LION AMMONIUM NITRATE FERTILIZER—The improved spherical white pellets in this product contain a guaranteed minimum of 33.5% nitrogen. They flow freely, resist caking and store much better. Lion Ammonium Nitrate Fertilizer is shipped in 100-pound, 6-ply bags with two moisture-proof asphalt layers.

LION SULPHATE OF AMMONIA—This new, superior-type sulphate is guaranteed to contain a minimum of 21% nitrogen. Through special conditioning of the larger crystals, moisture and free acid content is greatly reduced. These factors, together with the special coating applied, make for greater resistance to caking in shipment or in storage. This product flows freely. It is shipped in bulk and in 100-pound, 6-ply bags laminated with asphalt.

Serving Southern States

Technical advice and assistance to fertilizer manufacturers in solving their manufacturing problems is available for the asking...just write.

LION

LION OIL COMPANY

Chemical Division • El Dorado, Arkansas

An excellent example of efficient, low cost volume fertilizer handling and packaging using EXACT WEIGHT Sacking Scales. Installation in Jackson Fertilizer Plant.

Today's Handling and Packaging Problems . . .

The planning stage is the place to cope with labor shortage and cost control this year. How? By skillful use of equipment to cut manpower . . . improve quality . . . cut processing and handling time. Face the fact of general labor shortage for 1952. Equipment must substitute and since good scales are a vital link in controlling quality, recovering product, insuring uniformity and cutting costs incorporate them in your plans now. Strive for as many laborless applications as possible. Some EXACT WEIGHT Scales are fully automatic in application. A wide range of EXACT WEIGHT models are available for semi-automatic packaging and handling. (Illustrated above is such equipment). If manual operations are necessary use modern labor saving devices with these famous weighing units. Remember wherever there's industry there's EXACT WEIGHT Scales. You will save time and money by including them in your plans. Write for full details.

SALES and SERVICE in all Principal Cities from Coast to Coast and Canada.

EXACT WEIGHT SCALES

Industrial Precision

THE EXACT WEIGHT SCALE COMPANY

906 W. Fifth Avenue • Columbus 8, Ohio
2920 Bloor St., W Toronto 18, Canada

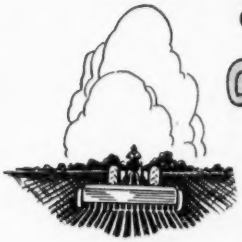
FERTILIZER MANUFACTURERS

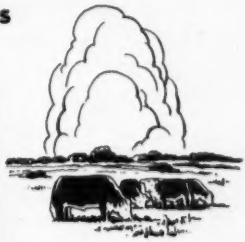
TENNESSEE CORPORATION

MINERALS MIXED TO YOUR OWN SPECIFICATIONS

MINERALS ARE ESSENTIAL TO OPTIMUM CROP PRODUCTION

One of the country's foremost producers of Agricultural Chemicals and Soluble Mineral Salts





COPPER SULPHATE

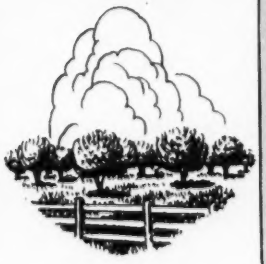
ZINC SULPHATE

MANGANESE SULPHATE

MAGNESIUM SULPHATE

BORON

FERRIC IRON SULPHATE



Producers Of ES-MIN-EL — Essential Mineral Elements

And Special Mineral Mixtures For Fertilizer Manufacturers

For further information phone, wire or write

TENNESSEE CORPORATION

TENNESSEE CORPORATION

Atlanta, Georgia — Lockland, Ohio

COMMERCIAL FERTILIZER

ESTABLISHED 1910

April, 1952

Vol. 84 No. 4

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BRUCE MORAN, *Editor* V. T. CRENSHAW, *Business Manager*

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Phone REPUBLIC 1-3050

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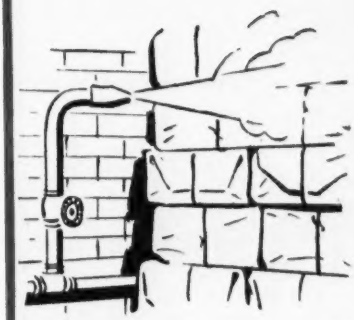
NO. 1
OF A SERIES
ON HOW TO

Stretch a MULTIWALL Paper Bag

It is just good business to get the best possible use from your multiwalls. Here is one way to do it . . .

Keep Storage Rooms Humid:



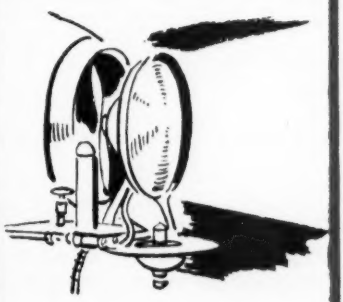
1. Let steam escape in bag storage room to keep air and bags humid. Keep a humidity indicator in the storage room and check it frequently. Always leave aisles or spaces between stacks of bags to allow circulation.

2. Store bags on dunnage, away from floor, and keep floor wet so moisture can be absorbed into air. A relative humidity of about 50% at warm temperature is best.

3. Drill small "needle" holes in horizontal water pipes. Hang cloths over holes. Air absorbs moisture from wet cloths.

4. Hang wet cloths over edge of water barrels. Cloth absorbs water and air absorbs moisture from cloth. Keep barrels well filled.

5. Open windows on damp or rainy day. Damp outside air will circulate in the bag storage room. Multiwalls are strongest when moisture content of the paper is about 6 or 7%.



6. Use commercial humidifying apparatus. Many types of commercial humidifiers are available with capacities to suit individual requirements.

Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

• • •

If you need cotton or burlap bags also, Bemis is your best source.

Bemis

BEMIS BRO BAG COMPANY

St. Louis 2, Missouri

Sulphur

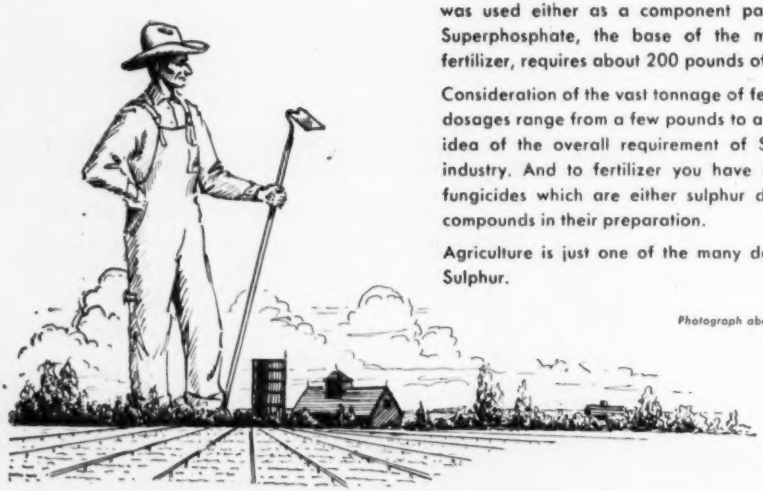
Thousands of tons mined daily, but where does it all go?

THE DEPARTMENT OF AGRICULTURE reports that in 1950 some 336,000,000 acres of land in the United States were under crop cultivation. That's a lot of acreage.

But where, you might ask, is the connection with Sulphur? Fertilizer, to take just one phase of agriculturally-used chemicals in which Sulphur was used either as a component part or as a processing element! Superphosphate, the base of the most widely used manufactured fertilizer, requires about 200 pounds of Sulphur for every ton produced.

Consideration of the vast tonnage of fertilizer used in agriculture — and dosages range from a few pounds to a ton or more per acre — gives an idea of the overall requirement of Sulphur for this one division of industry. And to fertilizer you have to add all the insecticides and fungicides which are either sulphur derivatives or have used sulphur compounds in their preparation.

Agriculture is just one of the many destinations of great tonnages of Sulphur.



Photograph above shows our loading dock at Galveston, Texas

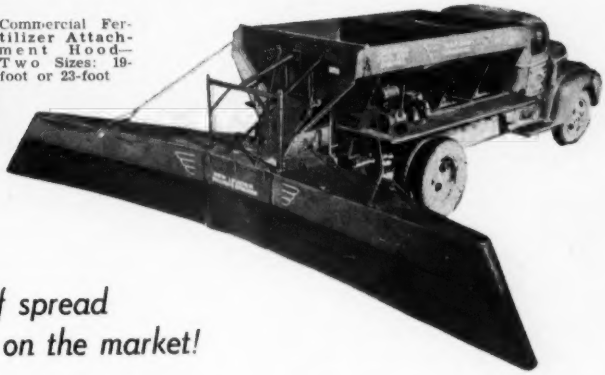
Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

Here's the answer to your Spreading Problems!

AGAIN! "The NEW LEADER" leads the field



Commercial Fertilizer Attachment Hood—Two Sizes: 19-foot or 23-foot

with its new "Motor-Driven Spreader" offering greater accuracy of spread with the most positive feed on the market!

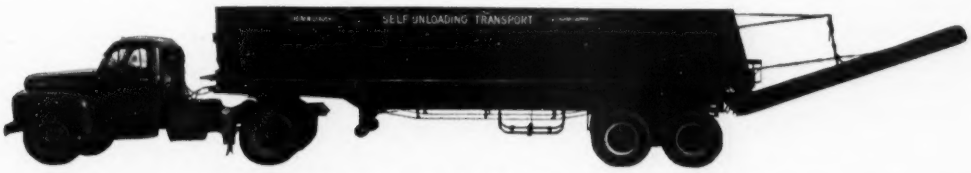
SPECIAL ADVANTAGES—Uniformity of spread is not dependent on truck speed. Motor is mounted on catwalk and drives only the twin distributor discs at a constant speed, assuring full width of spread at all times together with uniform distribution.

Conveyor is separately driven from truck drive shaft by a series of V-belts to deliver the correct amount per acre—regardless of truck speed or regardless of whether the truck is driven in low, super-low or any other gear.

Conveyor speed is, therefore, positively synchronized with speed of the rear wheels of truck and at each revolution of the rear wheels, the conveyor moves a given distance regardless of the truck's speed. Amount of material delivered by conveyor does not vary with hilly or soft field conditions.

Spreader Body Lengths (inside measure) are 9', 11', 13' and 15'. Other body lengths on special order.

Note: When Spreading Attachment is folded up for road-traveling position, width is approximately 7'-5"



"The NEW LEADER" Self-Unloading Bulk Transport

The 20-ton capacity transport above is shown with elevator in place and ready to load a NEW LEADER Spreader truck. These units are proving very profitable; in bad weather they eliminate demurrage on railroad cars; fertilizer gets to the job quickly and spreader trucks can be kept working in the field. The transport, being a self-unloading unit, leaves the tractor truck free to return to pick up another transport load. These units have four individual compartments of 5 tons each. Each compartment may be unloaded independently of the others. Compartments and rear endgate are removable so that bagged and packaged goods may be hauled instead of bulk loads. Capacity 5 tons to 25 tons, lengths from 11 ft. to 40 ft. Written warranty with all NEW LEADER equipment. Write today for specifications, prices, etc. Fast delivery service sells fertilizer!

FREE! Write for "The Story of a Custom Fertilizer Spreading Service".

HIGHWAY EQUIPMENT COMPANY, INC. CEDAR RAPIDS, IOWA

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

JUST AROUND THE CORNER

By Vernon Mount

Economics is a pendulum and we are in the midst of a gentle swing. Call it a sidewise movement. Whatever name you give it, it is still healthy.

Price breaks log-jam. Whenever we get to the state where things cost more than folks are willing to pay, we get to a stage like the one we've been in for a year - March to March. Now prices are coming down. Not far. But enough, I believe, to send people out to the stores to stock up again.

Prices won't stay down. They are sure to go up again on most commodities, especially agricultural. Farmers are sensitive to price, and can shift base. We may have steel "running out of our ears," as steel consumers report, but it won't be for long.

Butter and guns cannot be supplied simultaneously without a strain on production, which means scarcity, which in turn means higher prices.

Higher wages in steel, then coal - then a long list of the "me too" unions - will contribute their share to higher costs and higher prices.

Business displays confidence by the investment of billions in new plants of all kinds: Fourteen billion in 1950; Eighteen billion in 1951; Twenty-one billion set up for 1952 ...doesn't that tell the story pretty well?

Yours faithfully,

Vernon Mount

A NEW SEASON . . . the robins have returned to their nesting grounds

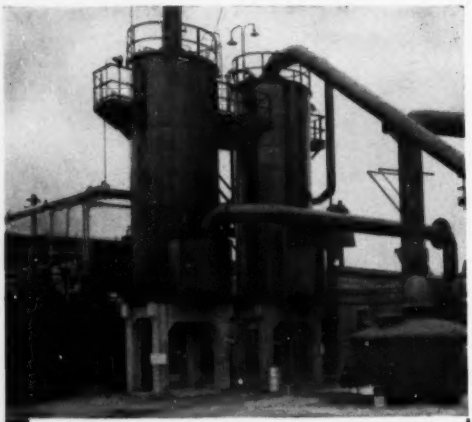
. . . and trucks loaded with commercial fertilizers are making their way to farms everywhere.

Yes, this is going to be another big year for farmers, fertilizer producers, packers, and shippers . . . and RAYMOND MULTI-WALL PAPER SHIPPING SACKS.

This year, pack your fertilizers in Raymond CUSTOM BUILT Fertilizer Shipping Sacks.

A Raymond representative will be glad to assist you in selecting the perfect sack for your particular needs. Wire, write, or phone Raymond today!

THE RAYMOND BAG COMPANY
Middletown, Ohio



Serving the free world

Monsanto-designed sulfuric acid plants now are producing approximately 40 per cent of the free world's contact sulfuric acid. There are more than 300 of these efficient, economical plants, operating in 26 countries around the globe. Monsanto-designed plants, employing Monsanto Vanadium Catalyst, do not depend upon elemental sulfur alone, but work with all known raw materials. Monsanto designs, having many exclusive features, are based on more than 30 years' experience in sulfuric acid plant design, construction and operation. If you are considering a sulfuric acid plant for the future, you are invited to discuss your problems with Monsanto engineers. Their counsel costs you nothing . . . puts you under no obligation.
MONSANTO CHEMICAL COMPANY,
Engineering Sales Department,
1700 South Second Street, St. Louis 4, Mo.

MONSANTO
CHEMICALS — PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

THIS LIST!

MENTE SEALPAK

THE LAMINATED BAG

Has All These Desirable Features:

Water-resistant **Weather-safe**
Siftproof **Odorproof**
Puncture-resistant
Acid-resisting **Grease-repellent**
Contamination-proof

Burlap (or cotton) on the outside, paper on the inside—the two laminated together with a smooth, even film of asphalt (or other special adhesives) to make a strong, protective bag guaranteed to preserve the original fine quality of your product.

Write Wire Phone

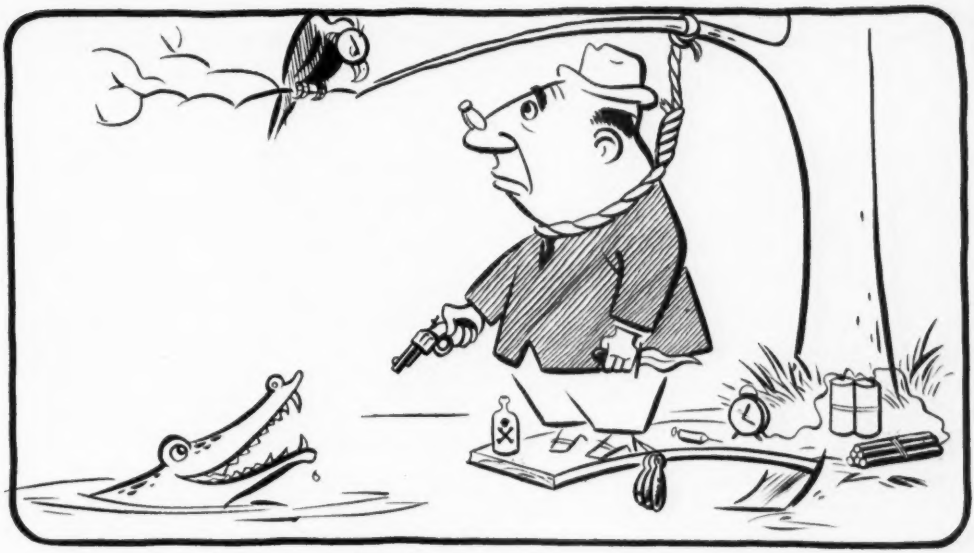
Our Nearest Office

MENTE & CO., INC.

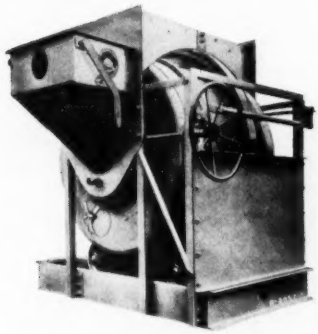
Isaac T. Rhea, Pres.

Box 1098 Savannah — Box 690 New Orleans — DEPT. B1 Box 204 Houston

TEXTILE BAG SPECIALISTS SINCE 1885



He can't stand that slow mixing cycle!



WORTHINGTON DRUM-TYPE FERTILIZER MIXER, one of the complete Worthington line of industrial mixers of all kinds that incorporate features and advantages brought about during nearly a century of experience in mixer design. Standard sizes of fertilizer mixers, ½, 1, 2, 3-ton capacity.

WORTHINGTON

Industrial Mixers

Wait! Our way is easier! It's a mixer that can boost your daily output as much as 10 per cent—the *Worthington fertilizer mixer*. Secret of the fast mixing action is Worthington's engineered blade design which gives the fastest mixing cycle we know of. You save time with every batch. Mixing is thorough, too, and special mixer design is such that it eliminates these other big problems for you:

THE CORRODED DISCHARGE CHUTE—The Worthington discharge chute is out of the mixer during mixing time. Proper balance makes manual control of chute easy. Pneumatic controls also available.

THE WOBBLY DRUM ROLLER—Worthington drum rollers are of genuine carwheel metal, ground to exact diameter. Compensation for wear to permit perfect centering is accomplished by easy adjustment of drum-roller shafts.

THE HEAVY HORSEPOWER CONSUMER—Worthington's clean, anti-friction construction with specially designed parts assures minimum possible horsepower consumption.

YR.2.1

SEND THIS COUPON TODAY to learn more about how to reduce mixing time with a Worthington fertilizer mixer.

Worthington Pump and Machinery Corporation
Industrial Mixer Division, Dunellen, New Jersey

NAME.....

POSITION.....

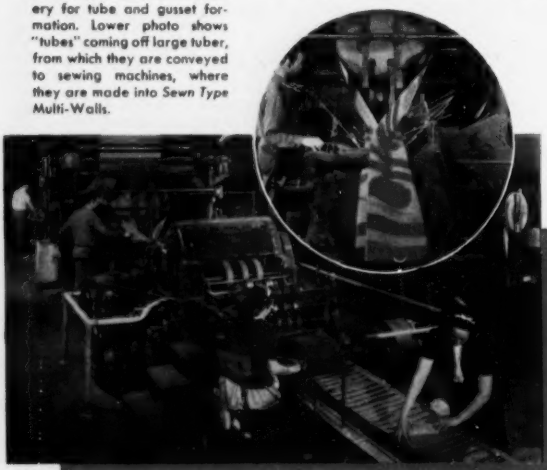
ADDRESS.....

CITY.....ZONE.....STATE.....

There's more than meets the eye in

HAMMOND *Multi-Wall* BAGS

Insert shows intricate machinery for tube and gusset formation. Lower photo shows "tubes" coming off large tuber, from which they are conveyed to sewing machines, where they are made into *Sewn Type* Multi-Walls.



HIGHEST QUALITY PAPERS AND MATERIALS

MODERN MACHINES—SKILLED PERSONNEL

EFFICIENT PLANT OPERATIONS

PASTED VALVE TYPE

SEWN VALVE TYPE

OPEN MOUTH PASTED BOTTOM

OPEN MOUTH SEWN BOTTOM

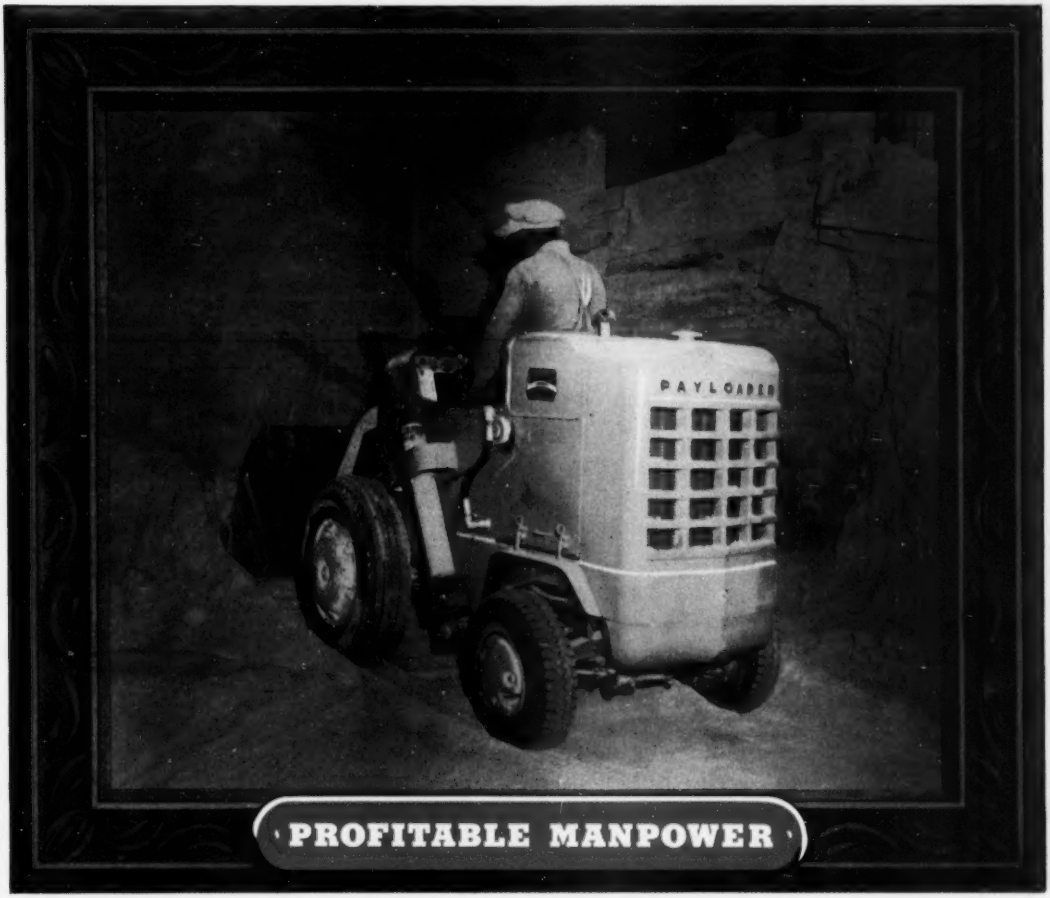
Satisfied customers in the industries we serve know that all multi-wall bags are not alike. The combined efforts of progressive management, conscientious and thoroughly trained personnel, and expert sales engineers who thoroughly understand the problems of shipping hundreds of products—are the primary reasons for the superiority of Hammond Multi-Wall Bags. Constant research, improvements in papers and bag construction for specific requirements provide Better Bags for shipping cement, flour, fertilizers, chemicals, potatoes, food, feed, plaster, lime, insulating materials, and hundreds of other products. *Write for booklet—"To Serve You Better with Hammond Multi-Wall Bags."*

HAMMOND BAG & PAPER COMPANY

General Offices: Wellsburg, W. Va. ***Plants in*** **Wellsburg, W. Va. and Pine Bluff, Ark.**

Representatives in the following cities:

Chicago, Ill. Minneapolis, Minn. New York, N.Y. Bluefield, Va. Columbus, Ohio
Charlotte, N. C. Ligonier, Pa. Houston, Texas Kansas City, Mo. Baltimore, Md.



PROFITABLE MANPOWER

This man may have been good with a wheelbarrow and hand shovel, but his productive capacity is several times greater as a "PAYLOADER" pilot. He's happier and so is his boss, because they both make more money.

"PAYLOADER" tractor-shovels are helping fertilizer and chemical plants slash production costs. They actually pay for themselves in a few months doing the many jobs listed here . . . doing them faster and cheaper — and release manpower for more productive work.

These special tractor-shovels are available in seven sizes, from 12 cu. ft. to 1½ cu. yd. to master your jobs both indoors and outdoors. Get full facts *now* on cost-cutting, time-saving, production-boosting "PAYLOADER". The Frank G. Hough Co., 702 Sunnyside Ave., Libertyville, Illinois.

FOR MANY JOBS. *Unload box cars — dig and carry fertilizers, chemicals and all loose materials — feed conveyors, hoppers, baggers, elevators — unload trucks — load box cars — carry bagged materials — clean up aisles, gangways — maintain private roadways — stockpile and carry coal — handle ashes — remove snow — spot cars — lift, haul, push, pull.*

SEND FOR

and "Industrial Handling" is full of profitable ideas developed by "PAYLOADER" users. A request on your letterhead gets you on the regular mailing list without cost.

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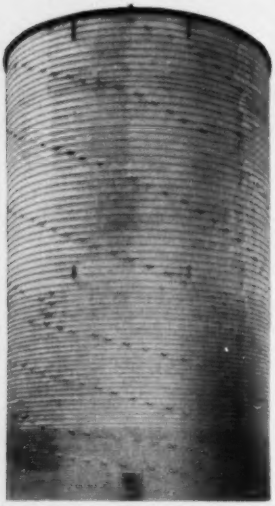

This concrete storage tank, erected by Marietta for The Tennessee Corporation, New Albany, Indiana, is 30' x 50', and stores 1500 tons of phosphate rock, fully protected against fire, heat, acid, air, moisture and the elements. It is equipped with a suspended steel hopper to feed stored materials into the pulverizer of the fertilizer plant.

Marietta tanks, of Air-Cell or solid concrete precast staves, in sizes from 10 to 30 ft. in diameter, 30 to 100 ft. in height, can solve your present and future storage and handling requirements. Engineering and erection service available.

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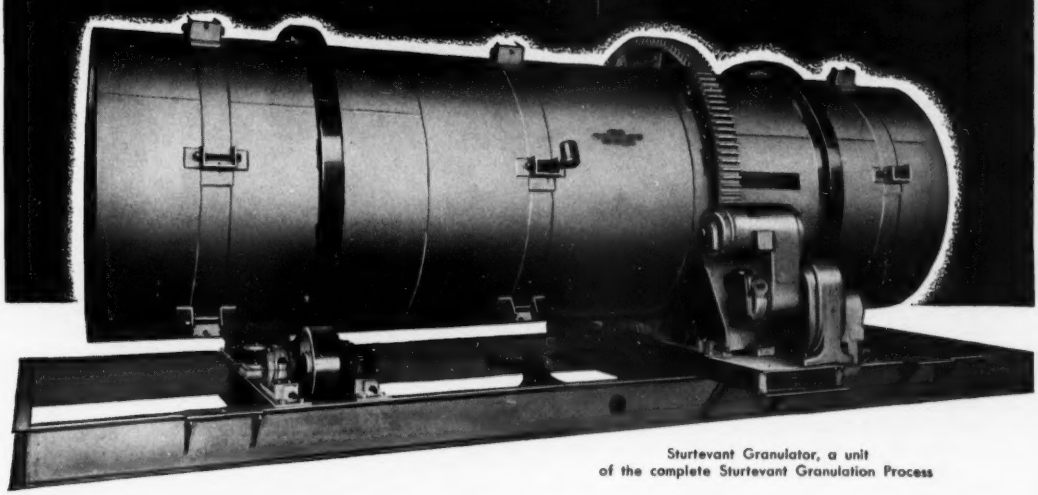
with the New

Sturtevant Granulation Process



Sturtevant Granulator, a unit
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★ ***Granular fertilizer can be stored over longer periods of time***

★ ***Holds chemical properties without deterioration***

It's here . . . the new Sturtevant Granulation Process for manufacturing granular or pelletized fertilizer. This outstanding method prepares fertilizer granules of uniform size. Its unique design and rugged construction assure long operating life with little if any maintenance.

It will pay you to investigate this new method of fertilizer preparation and Sturtevant Equipment.

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On a farm, every living creature – every living plant – absorbs nourishment 24 hours a day. Since, ultimately, this nourishment must be traced to the soil, every passing day means a tremendous drain on the rich plant-food elements in the land.

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UNITED STATES POTASH COMPANY, Incorporated, 30 Rockefeller Plaza, New York 20, N. Y.

Report To District OPS Instead Of National

Processors of agricultural commodities who make "parity" adjustments in their ceiling prices hereafter will notify their appropriate District Office of Price Stabilization of these adjustments rather than the OPS National Office. OPS said the number of notices reaching the National Office has become so large that it is deemed advisable to have processors send the notices to District Offices. The action also is in line with the general policy of decentralizing the administration of adjustments and filing.

Kentucky's Second Green Pasture Tour

On April 22 the second annual Green Pastures Tour will leave Berea College Dairy Farm and go South through the rugged hill country of the Cumberland National Forest, seeing Cumberland Falls en route, thence West through lower Kentucky and across the new Wolf Creek dam, then North to Cambellsville—ending just South of Danville in the Central Blue Grass Region, April 24.

This sounds like a vacation trip, indeed, but B. W. Fortenberry, Green Pastures Chairman, and M. W. Qualls, Tour Chairman have laid out a program of pasture visits that will be illuminating. Make reservations for Tuesday night at Cumberland Falls State Park, indicating you are on the tour.

How To Tell Your Top Brass

Technical folks have long suffered under the handicap of being somewhat incomprehensible to the lay minds of their managements. Comes Chemonomics, Inc., 400 Madison Avenue, New York 17, N. Y., with a book called "Communication of Technical Information" which tells how to make things clear to floks, whether they be top brass or the hired help. It costs $5 and was written by Robert M. Dederich. It covers Why is transfer of information necessary? Who can use the information? How will the information be used.

It Seems to Me

by BRUCE MORAN

Lately I've been seeing and hearing the phrase "The Fifth Plate." It means that by 1975 there will be an extra mouth to feed, an extra plate to set at the national family table, for every four plates laid in 1950 . . . a 25% increase in population. Those who write and talk on this subject are wondering, quite seriously, whether the farmers of the nation can keep up with the demand.

It would be easy to say the farmers will increase 25%, too. And that we have plenty of idle farm land. But there is likely to be less land under cultivation then, because there will be fewer families living on the soil. So it does present a real problem.

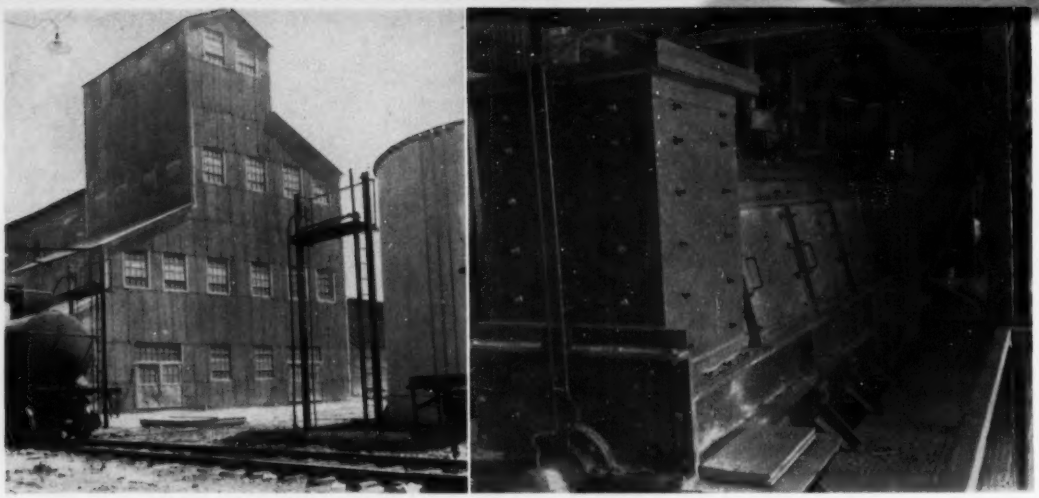
The answer, it seems to me, rests on education of the farmer. A big step forward is the local Plant Food Educational Society, of which there are a number, at State levels, already hard at work. These societies stand between the farmer and the agricultural researchers—relaying information from the laboratory to the farm, and reporting the results back again to the laboratory.

These societies can teach better land use, mechanization, better fertilizer application—and the modern miracles being worked by the allied farm chemicals. They can do wonders if they are encouraged, developed, backed by the really great power for education which they could coordinate so well.

We can solve the problem of the extra plate, if we will all funnel our knowledge and our manpower through a single channel—and cooperate to get the job done—and get it done in time.

INDUSTRY CALENDAR

Date	Organization	Hotel	City
April 6-9	NACA	Fairmont	San Francisco
June 16-18	NFA	Greenbrier	White Sulphur
June 19-22	APFC	Homestead	Hot Springs
June 23-27	Canadian	Seigniory Club	Montecello
Aug 17-23	Grasslands	Penn State	State College
Nov. 10-12	CFA	Desert Inn	Palm Springs



Acidulating building at Meridian Fertilizer Factory, Hattiesburg; Right, Broadfield mixer and den.

THE HATTIESBURG EXPERIMENT

TRIPLE SUPERPHOSPHATE ON CONVENTIONAL SINGLE SUPERPHOSPHATE EQUIPMENT

THE PROGRAM

March 26th

10:00 A.M.—11:00 A.M.
The Production of Superphosphate (regular practice) Broadfield Den

11:00 A.M.—Noon
The Production of Enriched Superphosphate Using a Mixture of Phosphoric Acid, 32% P_2O_5, and Sulfuric Acid 93%

2:00 P.M.—3:00 P.M.
The Production of Enriched Superphosphate Using a Mixture of Phosphoric Acid, 42% P_2O_5, and Sulfuric Acid 93%

4:00 P.M.—5:00 P.M.
The Production of Enriched Superphosphate—Other Mixes

March 27th

9:00 A.M.—10:00 A.M.
The Production of Triple Superphosphate Using Phosphoric Acid, 54% P_2O_5

11:00 A.M.—Noon
The Production of Triple Superphosphate Using Phosphoric Acid, 46% P_2O_5

2:00 P.M.—4:00 P.M.
The Production of Triple Superphosphate—Other Mixes

In the presence of a distinguished group of invited fertilizer people, various grades of superphosphate, up to triple, were produced on conventional equipment for single superphosphate. The program was staged at the Hattiesburg, Miss., plant of the Meridian Fertilizer Factory, by Chemical Construction Corporation, who selected the site of the experiment because that plant uses one of the most up-to-date fertilizer procedures in the manufacture of superphosphate.

The whole procedure developed because the impending sulphur shortage several years ago caused Chemico's attention to return to the problems in the phosphate field. This resulted in new Chemico designs for handling spent sulfuric acid and a pilot plant demonstration of a process for treating phosphoric rock with nitric acid.

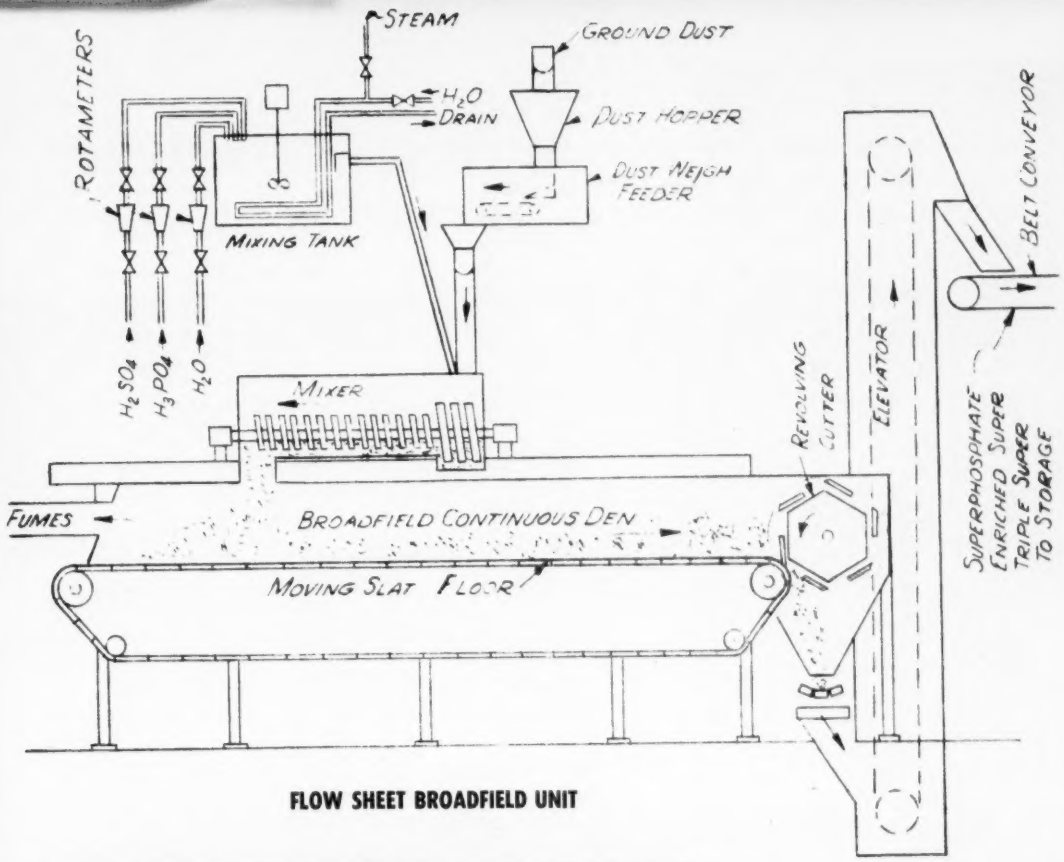
The success of these processes led to the Hattiesburg tests of September last year, in which it was demonstrated that enriched superphosphate could be produced by treating phosphate rock with a combination of phosphoric and sulfuric acids. This intermediate grade fertilizer is, per unit of available phosphoric acid, cheaper to manufacture than triple superphosphate, of which there is, of course, an acute shortage currently.

The tests run March 26 and 27 last went a great deal further, and carried the processing through a whole graduated series of tests, as is indicated by the program to the left.

If it were not for the shortage of sulphur in this country, several plants would be underway for the production of higher strength phosphates. It is the opinion of Chemico executives that before 1954 this situation will clear, and many new phosphoric plants should be erected.

Chemico's engineering designs for the Texas City Chemical Company's plant with an expected annual production of 70,000 tons, will initiate an important contribution to the national economy, in view of the sulphur shortage, by applying their flow scheme for the use of spent sulfuric acid. This will come in by pipeline in the form of 50% acid, from which a special unit will produce 98% sulfuric by fortifying the spent acid.

Chemico's designs for the Nichols plant of Virginia-Carolina Chemical include the use of their High Temperature Acid Concentrator, which brings the phosphoric acid quickly and economically up to concentra-



FLOW SHEET BROADFIELD UNIT

tion required for the manufacture of triple superphosphate.

With its primary interest the manufacture and use of sulfuric acid, Chemico was prominent in the early development of the phosphate food and fertilizer business in the United States. But during the depression and war years of the 30's and 40's when construction of phosphate product plants slacked off, they were only sporadically involved in the phosphate field.

Top: R. E. "Robbie" Robinson, Atlanta Utility Works, Atlanta, Sidney Prince, Chemical Construction Corp., New York, [illegible], "Tommie" Thomason, Atlanta Utility Works, Atlanta, M. G. Fields Meridian Fertilizer Factory, Hattiesburg, M. D. Broadfield, Arkansas Farmers Plant Food Co., North Little Rock, Van Valkenburg, Chemical Construction Corp., New York, J. B. Whitney, Chemical Construction Corp., New York.

Bottom: Half of the group which attended the dinner given by Chemical Construction Corporation, which company sponsored the meeting at Hattiesburg. The group broke up before another shot could be made of the other half of the group.

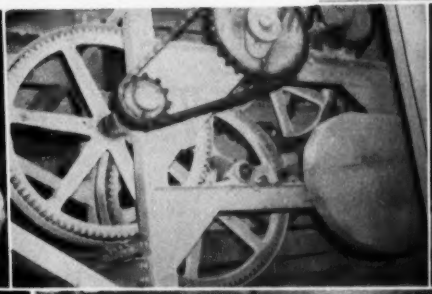
NAME	ORGANIZATION	ADDRESS
Edwin C. Kapusta	National Fertilizer Ass'n	Washington, D. C.
L. D. Yates	Tennessee Valley Ass'n	Wilson Dam, Ala.
W. L. Hill	U.S. Dept. of Agriculture	Beltsville, Md.
Edward J. Fox	U.S. Dept. of Agriculture	Beltsville, Md.
J. B. Whitney	Chemical Const. Corp.	New York City
Van Valkenburg	Chemical Const. Corp.	New York City
A. C. Barnbl	Oliver United Filter, Inc.	Chicago, Ill.
T. O. Tongue	Davison Chem. Corp.	Baltimore, Md.
S. W. Rose	Davison Chem. Corp.	Baltimore, Md.
S. A. Pryor	Davison Chem. Corp.	Baltimore, Md.
Erol Becker		Istanbul, Turkey
Robert E. Robinson	Atlanta Utility Works	Atlanta, Ga.
M. D. Broadfield	Ark. Farmers Plt. Fd. Co.	N. Little Rock, Ark.
G. A. Howland	Tenn Corp., Atlanta	College Park, Ga.
O. B. Lanie, Jr.	Armour Fert. Co.	New Orleans, La.
E. K. Thomason	Atlanta Utility Works	East Point, Ga.
A. A. Heisler	Baugh & Sons Co.	Baltimore, Md.
J. L. Prosser	Baugh & Sons Co.	Baltimore, Md.
E. J. Buhner	Buhner Fertilizer Co.	Seymour, Ind.
E. P. Podsiadlo	Westvaco Chem. Div.	Lawrence, Kas.
O. A. Power	Westvaco Chem. Div.	Pocatillo, Idaho
John S. Mark	Naco Fertilizer Co.	Charleston, S. C.
Charles A. Lindsay	Stauffer Chem. Co.	Las Angeles, Calif.
W. E. Weems	American Cyanamid Co.	Louisville, Ky.
H. V. Lehn	I. P. Thomas & Son Co.	Paulsboro, N. J.
W. A. Willis	V-C Corp.	Memphis, Tenn.
John R. Taylor	American Plt. Fd. Council	Washington, D. C.
C. C. Crawford	Okla. Fer. Chem. Co.	Oklahoma City, Okla.
F. E. Cox	Okla. Fer. Chem. Co.	Oklahoma City, Okla.
T. M. Griffin	Okla. Fer. Chem. Co.	Oklahoma City, Okla.
Charles M. Hickey	Cons't'd Chem. Ind., Inc.	Houston, Texas
B. M. O'Harra	Thurston Chem. Co.	Joplin, Mo.
W. S. Tyler	Longhorn Eng. Co.	Sulphur Springs, Tex.
J. A. Germany	Mathieson Chemical Co.	Houston, Texas
S. S. Prince	Chemical Const. Corp.	New York City
Frank A. Wilson	Stagson Research Corp.	Charleston, S. C.
Virginia Crenshaw	Commercial Fertilizer	Atlanta, Ga.
W. B. Andrews	Miss. State College	State College, Miss.
S. S. Emison	Cons't'd Chem. Ind., Inc.	Houston, Texas
C. T. Harding	V-C Corp.	Richmond, Va.
J. W. Venable, Jr.	V-C Corp.	Richmond, Va.
Curtis A. Cox	V-C Corp.	Richmond, Va.
Roy Pratt	Sou. Agri. Fertz. Co.	Clarksdale, Miss.
M. T. Reed, Jr.	M. T. Reed Const'n Co.	Jackson, Miss.
Hugh Latimer	Supreme Feed & Fertz Co.	Phila, Miss.

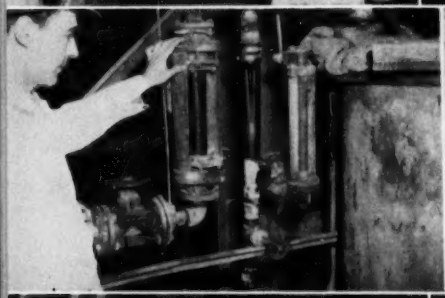
But with the impending shortage, as already noted, they returned to the phosphate field, and the nitric acid technique, already mentioned, was developed. The features of this technique are: production of ammonium phosphate, ammonium nitrate, as well as valuable by-products, all without need for any sulphuric acid. The moderate quantity of sulphuric salt required in one phase of the operation is regenerated so that it can be used over and over.

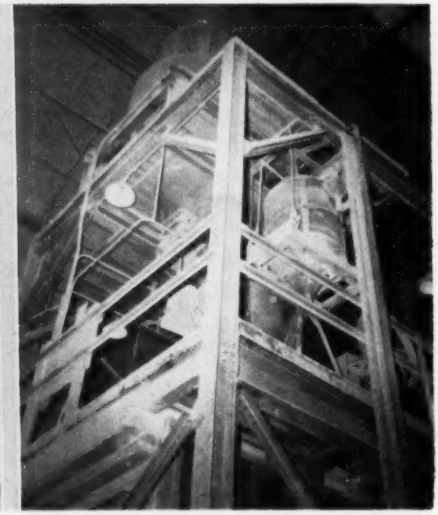
KEY TO PICTURES

1. Payloader stops work at the pile for J. B. Whitney to pose for this picture. **2.** M. D. Broadfield, Arkansas Farmers Plant Food Co., North Little Rock, C. M. Hickey, Consolidated Chemical Industries, Houston, A. C. Barnbl, Oliver United Filter, Inc., Chicago, W. R. Baughn, Plant Supt., Meridian Fertilizer Factory, Hattiesburg. **3.** Conveyor drive gears that make the belt crawl. **4.** M. D. Broadfield, Arkansas Farmers Plant Food Co., North Little Rock, O. B. Lanie, Armour Fertilizer Works, New Orleans, W. A. Willis, Virginia-Carolina Chemical Corp., Memphis. **5.** Acid Feed rotameters. **6.** E. J. Fox and W. L. Hill, both of USDA, Beltsville. **7.** Sidney Prince, Chemical Construction Corp., New York. **8.** E. C. Kapusta, National Fertilizer Association, Washington, John S. Mark, Naco Fertilizer Co., Charleston, C. A. Lindsay, Stauffer Chemical Co., Los Angeles, and J. A. Germany, Mathieson Chemical Corp., Houston. **9.** M. D. Broadfield, Arkansas Farmers Plant Food Co., North Little Rock, E. K. "Tommie" Thomason, Atlanta Utility Works, Atlanta. **10.** E. P. Podsiadlo, Westvaco Chemical Co., Lawrence, B. M. O'Harra, Thurston Chemical Co., Joplin, O. A. Power, Westvaco Chemical Co., Pocatillo. **11.** M. G. Fields, Meridian Fertilizer Factory, Hattiesburg. **12** Hugh Latimer, Supreme Feed & Fertilizer Company, Philadelphia—"You should have seen that 'red' shirt." **13.** Van Valkenburg, Chemical Construction Corp., New York, E. Becker, Turkey, Joe Whitney, Chemical Construction Corp., New York, W. B. Andrews, Mississippi State College. **14.** John R. Taylor, American Plant Food Council, Washington, S. W. Rose, S. A. Pryor and T. O. Tongue all of Davison Chemical Corp., Baltimore. **15.** Joseph Venable, Jr., and Charlie Harding, both of Virginia-Carolina Chemical Corp., Richmond, Bill Tyler, Longhorn Engineering, Sulphur Springs, Texas, W. E. Weems, American Cyanamid, Louisville. **16.** R. E. "Robbie" Robinson and E. K. "Tommie" Thomason, both of Atlanta Utility Works, Atlanta, **17.** Homer Lehn, I. P. Thomas Co., Paulsboro, Frank Wilson, Stagson Research Corp., Charleston. **18.** George Howland, Tennessee Corp., Atlanta.

PROMINENT FERTILIZER MEN IN ATTENDANCE







Aerial view of the new plant. Below that, the storage and mixing room. Right, superphosphate processing equipment.

IM&C OPENS FORT WORTH PLANT WITH INSPECTION TOUR FOR 1000

International Minerals & Chemical Corporation has officially opened its new chemical fertilizer and superphosphate plant in North Fort Worth, Texas with an all-day open house and inspection for approximately 1,000 dealers, salesmen and customers, according to Maurice H. Lockwood, vice president in charge of the corporation's Plant Food Division.

Mr. Lockwood came to Texas from International's headquarters in Chicago together with J. W. Rutland, general manager, F. H. Perrin, production manager, and Dr. R. P. Thomas, technical service manager of the Plant Food Division, joining W. Q. Burns, Southwestern area manager from Texarkana, Ark.; R. I. Gilliland, Fort Worth district sales manager; and W. E. Saunderson, Jr., plant superintendent, as hosts for the event.

A preview inspection for representatives of the chamber of commerce, other prominent Fort Worth business men and officials, and the press and radio was held March 5.

The new plant, on North Deen Road, is now in full operation. It will have an average production of 60,000 tons of superphosphate and 15 to 20 types of mixed plant foods.

The site was chosen because it is close to the Consolidated Chemical Industries plant which supplies sulfuric acid, delivered by an underground pipeline between the two plants.

International itself supplies Phosphate from its mines in Florida and potash from its mine and refinery at Carlsbad, N. M. Nitrogen is purchased.

The new plant consists of six buildings — an office building, a change house and garage, a den building for the processing of superphosphate, a super phosphate storage building, a bag storage building, and the main building for the processing of mixed plant foods. All are of fireproof construction.

Operations are completely mechanized. Phosphate dust is pumped through an airveyor system, treated with sulfuric acid in a mechanically operated den. Overhead belt conveyors carry the resulting superphosphate to a storage building for curing. A combination milling and bagging unit in the storage building delivers the superphosphate to cars or trucks or to a conveyor that carries it across to the fertilizer operations in the main building to be processed into complete fertilizers.

A weigh-hopper unit in the main building can process two and a half tons of fertilizer at one time.

Indoor tractors make up the third type of materials handling, and the only hand operations necessary in the plant are when the bags are placed on the bagging machine for filling or at the loading dock when bags are lifted from the conveyor and stacked on trucks or cars.

Canopies over two of the loading docks make it possible to load plant foods under cover regardless of weather conditions.

A well on the premises furnishes the 50 gallons of water a minute that processing operations require.

Ground was broken for the plant December 13, 1950. J. R. Murphy & Co. of Fort Worth was general contractor and Empire Electric Company of Fort Worth, installed electrical equipment. The steel work was handled by Mosher Steel Company of Dallas.

From the SOUTHWEST...

Loading bins at the Southwest Potash Corporation's mine, Carlsbad, New Mexico.

A new dependable source of Potash

THE Southwest Potash Corporation announces that its mine and refinery near Carlsbad, New Mexico, will soon be in operation.

Installation and erection of the most modern mining equipment and refinery are well under way. Production in substantial volume of HIGH-K Brand* Muriate of Potash (60% K_2O minimum) is scheduled to begin about August of this year.

Southwest Potash will provide a dependable source of HIGH-K Brand Potash for agriculture and industry. Your inquiries are invited.

Southwest Potash Corporation

HIGH-K Potash

*Trade Mark

AT BROADWAY ★ NEW YORK 6, N. Y.

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Safety

Fertilizer Safety Movement Growing

Following the meeting in Atlanta during March, the activities of the Safety Conference Fertilizer Section have spread, and meetings are scheduled at Asheville, N. C. May 6 and at Richmond, Virginia, May 16. C. J. Watts, Naco, Wilmington, N. C. is chairman of the Asheville meeting and the Virginia meeting will be chairmanned by W. C. Richardson, Southern States Cooperative.

We present here the programs of these two meetings, having deleted the speaker titles when they are duplicated:

North Carolina—May 6

10:00 A.M. Remarks by Vernon S. Gornto, Secretary, Fertilizer Safety Section, National Safety Council, and Introduction of Guests and the Section Chairman

10:15 "Fertilizer Safety on a Nation-wide Basis"—J. S. Fields, Safety Director, Phillips Chemical Company, and Chairman, Fertilizer Section, National Safety Council

10:45 "Organizing an Accident Prevention Program in a Fertilizer Plant"—R. E. Reitz, Supervisor of Safety Inspections, Glens Falls Indemnity Company, Richmond, Virginia

11:15 "The Problems of Overhangs in the Storage of Bulk Materials"—J. D. Robbins, Superintendent, Virginia-Carolina Chemical Corporation plant, Wilmington, North Carolina

2:00 P.M. "Safety Precautions in the Storage and Use of Anhydrous Ammonia and Ammonia Solutions"—Park Newton, Applied Engineering Company, Orangeburg, South Carolina

2:45 "Fertilizer Safety News" — Tom Clarke, Editor, Fertilizer Safety News, Fertilizer Section, National Safety Council

(Continued on page 27)

DID YOU ANSWER THIS QUESTIONNAIRE?

Repeated here is a questionnaire sent to the entire industry by Tom Clarke, GLF Soil Building Service, Ithaca, New York. Response has been poor, and we are hoping this reminder will bring out the questionnaire you meant to fill out, or that you will use this one and send it to Tom.

One of the most important papers presented at the Atlanta meeting was that on Safe Handling of Anhydrous Ammonia and Ammoniating Soultions, by H. R. Krueger, Phillips Chemical Co. We print it here as part of our series on safety:

Fill out and mail to T. J. Clarke, G.L.F. Soil Building Service, Ithaca, New York

Name of Company .....

Complete Mailing Address .....

Name of Safety Man .....

Thumbnail Biography of Safety Man if available .....

.....

.....

Check phases of Safety work that you or your safety man is well qualified to discuss in our Newsletter:

small plants	nitric acid	storage
machinery	statistics	ammonium nitrate
organization	legislation	electrical
maintenance	first aid	sulfuric acid
housekeeping	rules	data sheets
conduct	solution	reports
general	engineering	explosives
small tools	fire	

Does your company publish a Safety Newsletter? .....
(If "Yes" will you put Tom Clarke on your mailing list.)

Will you be willing to submit material for use in the National Fertilizer Safety Newsletter? .....

What topic would you feel most qualified to write about? .....

.....

.....

Comments:

What should each issue of the Newsletter contain? cartoon? ....., **few jokes?** ....., **small plant column?** ....., **case histories?** ....., **I'm asking you?**

(Add sheet of paper if needed)

SAFE HANDLING OF ANHYDROUS AND SOLUTIONS

By H. R. KRUEGER
Director of Technical Service,
Fertilizer Sales Division,
Phillips Chemical Co.,
Bartlesville, Okla.

Anhydrous ammonia, ammonia "B" liquor, ammonium nitrate-aqua ammonia, and urea-aqua ammonia solutions are now in common use in commercial fertilizer plants throughout the United States. The merits of these materials as ammoniants of phosphate-carrying fertilizers are not to be denied since they provide an economical source of nitrogen while, at the same time, greatly improving the mechanical condition of the mixture; but it is sometimes alarming to note the laxity and carelessness with which these materials are handled at many plants. We think it worth while to point out the hazards involved and to recommend a few general suggestions as to their safe handling.

SAFETY MEETINGS

3:15 "Housekeeping"—E. C. Burroughs, Jr., Manager, Insurance Department, F. S. Royster Guano Company, Norfolk, Virginia
3:45 Film—"Henry's Ghost"
4:00 Round Table Discussion and Planning for the Fertilizer Section Meeting of 1953

Virginia—May 16

10:00 A.M. Opening Remarks by Chairman and introduction of guests
10:15 "Fertilizer Safety on a Nation-wide Basis"—John E. Smith, Safety Director, Spencer Chemical Company, Pittsburg, Kansas and Vice Chairman, Fertilizer Section, National Safety Council
10:45 "The Problem of Overhangs in the Storage of Bulk Materials" J. D. Robbins.
11:30 "Safety Precautions in the Storage and Use of Anhydrous Ammonia and Ammonia Solutions"—Park Newton
12:15 P.M. Adjournment for Lunch
2:00 "Fertilizer Safety News"—Tom Clarke
2:30 "Acidulation of Phosphate Rock"—Mr. Alexander, Superintendent, Swift and Company plant, Wilmington, North Carolina
3:15 "Housekeeping"—E. O. Burroughs, Jr.

Anhydrous ammonia, containing some 82% nitrogen by weight, is the most concentrated source of available nitrogen used by the fertilizer industry. However, because it is stored and transported as a compressed gas, it does require pressure equipment and a more specialized technique for handling. Its properties should be familiar to all of you, but it would be well to remind you again that its boiling point is -28°F, at 70°F it exerts a vapor pressure of 114 psig, and at 90°F, a pressure of 166 psig. It volatizes immediately upon release to the atmosphere and up to 100 ppm are permissible for a worker to endure for an eight-hour period. Four hundred ppm cause throat irritation and 700 ppm cause eye irritation, with usually no serious after effects, providing exposure is limited to relatively short periods of less than one hour. With slightly greater concentrations exposure is unbearable, with 5,000 to 10,000 ppm usually being fatal.

Commercial grade anhydrous ammonia as used by the fertilizer industry is almost entirely shipped in 11,000 gallon tankcars of I.C.C. specification 105A-300. Cars spotted for unloading should be on a level track, have brakes set, wheels blocked, and regulation blue "Tankcar Connected" signs affixed to the rails. Derails should be placed at one or both ends of the unloading track, approximately one car length from the car being unloaded, unless the car is protected by a closed and locked switch or gate.

After the car is properly spotted and protected, the following safety equipment should be readily available for any and all workers who are to engage in unloading operations:

1. Respiratory equipment, approved by the United States Bureau of Mines and used in strict compliance with the manufacturer's instructions. A canister-type industrial full-face mask may be used for gas concentrations of 3% and under for a brief exposure period, but if gas concentration exceeds 3%, is unknown or if exposure is prolonged, supplied-air respiratory equipment of proper design with full-face masks and protective clothing should be used.

2. Protective clothing, consisting of felt or treated fiber hats, rubber suits, gloves and shoes, should be available at all times for emergency use. Safety goggles should be worn at all times when handling ammonia.

3. Emergency equipment, consisting of the following, should be located as closely as possible to the area where ammonia is being handled:

   A. Safety shower of the treadle type
   B. Bubble-type drinking or eye wash fountains
   C. Respiratory equipment
   D. Stretcher and blanket.

Anhydrous ammonia tankcars are equipped with four valves in the dome, working as pairs. The two along the longitudinal axis of the car are the liquid valves and are connected to eduction pipes which extend almost to the bottom of the tank, while the two valves across or pointing to the sides of the car are the vapor lines and are connected to short pipes which extend into the vapor space above the liquid. There are some dual purpose tankcars in ammonia service that are equipped with excess flow valves, whose purpose is to shut off immediately the flow in event of a broken or ruptured line between tankcar and storage.

Tankcar connections should be made with ten-ply flexible rubber

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It's good business *and* good public relations to give customers something extra for their dollar. You do just that when you use Fulton Cotton Bags, for in every ton of fertilizer (20 bags) there is over 23 yards of quality cotton cloth, which is sought after and in demand for home sewing. Customers not only prefer fertilizer in cotton bags, but also appreciate the extra dividend of valuable sewing material.

Fulton Cotton Bags are easier to handle, too — less subject to tears and snags which incur waste and subsequent profit losses. Step up your own sales with Fulton Quality Cotton Bags — and reap the benefits of consumer preference.

Your nearest Fulton Branch will be happy to work with you in winning new friends and building lasting good will for *your* product.

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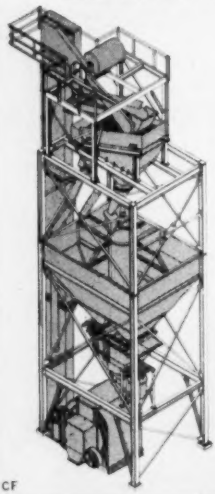
Johnson multiple material weigh-batcher, with 5,000-lb. dial head scale, accurately weighs up to 5 (or more) fine-grained materials. Top levers open fill valves from overhead 5 section bin. Lower lever discharges batch into the mixing unit.

Another

JOHNSON BLENDING PLANT

for midwestern fertilizer manufacturer

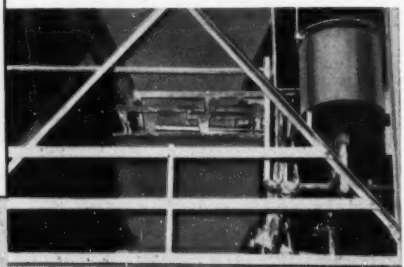


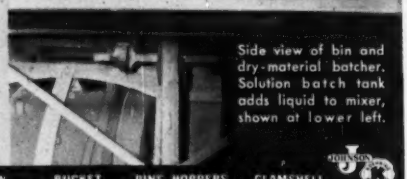
CF

TO modernize one of its plants, a leading midwestern fertilizer manufacturer installed Johnson elevator, bin and batching equipment . . . gained a 25% increase in production, and, at the same time, substantially reduced manpower requirements. As a result, the fertilizer firm has equipped another one of its manufacturing plants with Johnson blending equipment, shown here.

Here's how this mechanized handling eliminates slow, costly manual methods: In one continuous cycle of operation, material travels up bucket elevator to clod breaker . . . through separating screen into collecting hopper. From hopper, pulverized fertilizer passes through pivoted distributor into 5-section, 65 cu. yd. bin . . . then, to multiple-material weigh-batcher, and into mixing unit for final blending operation.

To check savings possible in your plants, call your Johnson distributor, or write us.





Side view of bin and dry-material batcher. Solution batch tank adds liquid to mixer, shown at lower left.

C. S. JOHNSON CO. CHAMPAIGN, ILLINOIS

Send us more information on Johnson fertilizer blending plants.

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steam hose, wire braided and armoured, with high pressure screw couplings. As ammonia corrodes copper and some alloys, all pipe, valves, fittings and couplings should be made of extra heavy black iron or designed especially for ammonia service. Only compressors designed for ammonia service should be used.

Storage tanks for anhydrous ammonia should be constructed and tested in accordance with the A.S.M.E. Code for unfired pressure vessels and for the working pressures indicated below:

Paragraphs U-68 and U-69 of the 1946 A.S.M.E. Code —200 psig; Paragraphs U-200 and U-201 of the 1949 A,S.M.E. Code —250 psig; 1950 A.S.M.E. Code —250 psig.

Construction in accordance with the A.P.I.-A.S.M.E. Code with a design working pressure of 250 psig is likewise satisfactory. Tanks must be equipped with one or more spring-loaded safety relief valves set at 250 psig pressure with vent pipes directed above and away from working areas. In warm climates, a light shed covering is recommended to afford protection from direct rays of the sun on the storage tank. In very hot locations, the additional protection of cool water sprays over the tank are helpful in keeping vapor pressures low. Tanks should be coated with light-reflecting paints, preferably white or aluminum. All tanks, valves, piping and fittings should be regularly inspected, valves kept in top working condition, with safety valves tested on regular schedules.

After the installation is properly engineered and all equipment is in top working order, the human element enters the picture. These are the men for whom all the proper equipment and safety devices have been designed. However, if the personnel is not trained in their proper use, the best designed equipment will not prevent accidents. A new operator should never be allowed to handle anhydrous ammonia until he has either been apprenticed to a skilled operator or has been taken step by step through the complete operation by a supervisor. Stress

should be placed on disconnecting procedure, which is just as important as connecting procedure.

It is not possible to place too much importance on safety rules and the necessity for strict compliance with them. The careless operator is a hazard, not only to himself but to all others in nearby areas.

Anyone who has anything to do with the handling of anhydrous ammonia should carefully study Chemical Safety Data Sheet SD-8 of the Manufacturing Chemists Association or Pamphlet G-2 of the Compressed Gas Association.

I have spent considerable time discussing the equipment and practices to follow in handling anhydrous ammonia, because the technique and equipment for handling anhydrous ammonia are more exacting than that required for the other fertilizer ammoniating solutions covered by this paper. The same general precautions should be followed for the other ammoniating solutions, as should the same protective equipment be kept available.

There are two types of ammoniating solutions made specifically for the fertilizer industry in common usage today. Six nitrogen producers are manufacturing ammonium nitrate fortified solutions containing from 37 to 49% nitrogen by weight with one producer offering a urea-ammonia solution containing around 45% nitrogen. The vapor pressures at 104°F of these solutions vary from one psig for the 37% solution to 50 psig for the 49% solution, while the urea-ammonia solution, at the same temperature, has a vapor pressure of 50 to 64 psig. The lower pressure of these ammoniating solutions, as compared to anhydrous ammonia, is one of the reasons for their wide acceptance in the fertilizer industry. Due to the high corrosive properties of all these solutions, most fertilizer plants use compressed air rather than pumps to transfer.

The ammonium nitrate type of solutions, due to their lower vapor pressures, are usually shipped in 10,000 gallon welded steel tankcars although several manufacturers are gradually changing over to aluminum tankcars to combat corrosion. Most of these cars are equipped with either lead or aluminum rupture discs rather than spring-loaded valves, but in either case the receiving plant should check the rupture disc pressure before unloading, in order that they will not apply too high an air pressure in transferring.

The urea solutions are shipped in two types of tankcars, some being high pressure cars with relief valves set at 225 psig others are low pressure cars with 75 psig relief valves. Relief valves on these cars are of the spring-loaded type, automatically re-seating, and the operator should check the relief valve pressure which is stenciled both on the end of the car and on the relief valve before applying air pressure to unload.

Storage tanks for ammonium nitrate solution should be fabricated of welded steel or preferably aluminum with a working pressure of at least 65 psig. Storage tanks for urea solutions should be designed for a 75 psig working pressure and a hydrostatic test pressure of 150 psig. Storage tanks should be protected from freezing to prevent crystallization of solids, and from direct rays of the sun in summer to keep vapor pressures low. All tanks should be equipped with the neces-

10% MORE N FERTILIZERS FOR 1952

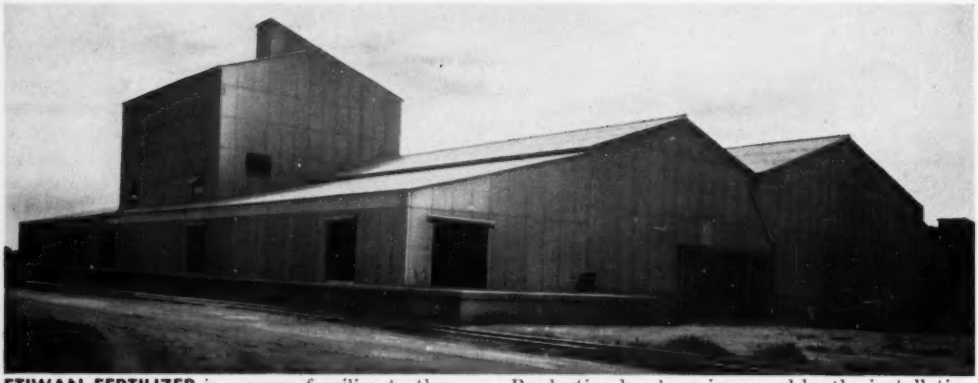
O. V. Tracy, NPA's chemical division director announced March 25 that the supply of nitrogenous fertilizers should be about 10% higher than in the 1950-51 season. Despite the 90% limitation on sulphur, the production of wet process superphosphate should be on a par with last season, and total superphosphate production will be better than might be expected, because of higher operation rate and increased use of spent and metallurgial acid.

425,000-Ton Nitrogen Certificates Granted

Certificates of necessity for accelerated tax amortization, involving the additional production of 425,000 short tons of nitrogen, have been issued to 10 facilities, the Defense Production Administration has announced. Approval of the certificates is in line with DPA's domestic nitrogen production goal of 2,930,000 tons annually in 1955 for all purposes including the manufacture of N compounds used as fertilizer. Of the 1955 capacity needed, 2,430,000 tons are already built or authorized, DPA said. Following is a list of the 10 certificates of necessity issued:

Name of Applicant	Location of Facility	Amount Applied For Thousands of Dollars	Amount Certified	Percentage	Additional Production Capacity (Short Tons)
Cooperative Farm Chemicals Assn.	Lawrence, Kans.	$13,818	(1)	45	51,800
Allied Chemical & Dye Corp. (Solvay Process Div.)	Omaha, Nebr.	$24,600	(1)	45	61,700
Deere and Co.	Missouri (2)	$18,500	(1)	45	57,600
Mathieson Chemical Corp	Lake Charles, La.	$ 411	$411,000	45	5,500
San Jacinto Chemical Corp.	Houston, Texas	$ 900	$900,000	45	11,500
Sid Richardson	Pointe-a la-hache, La.	$19,000	(1)	45	86,400
Pacific Chemical Co., Inc.	Pasco, Wash.	$ 5,735	(1)	45	18,100
W. R. Grace & Co.	Illinois (2)	$15,466	(1)	45	72,000
National Chemical Corp.	Yazoo City, Miss.	$ 7,212	(1)	45	34,500
Delta Chemical Corp.	Duras, La.	$ 8,892	(1)	45	25,900
			TOTAL		425,000

NOTE: (1) amount certified will be determined by DPA at a future date.
(2) exact location site as yet undetermined by the applicant.

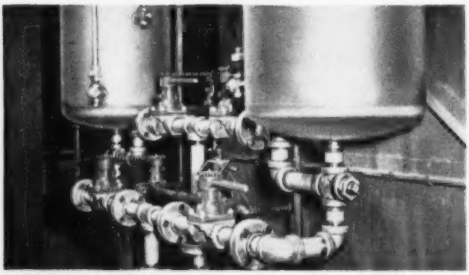


ETIWAN FERTILIZER is a name familiar to thousands of Carolina farmers. Recent improvements at this Charleston plant have given Etiwan one of the South's most modern fertilizer facilities. Production has been increased by the installation of dual measuring tanks. These save time usually lost in refilling the tank after each batch; also cut an operator's motions by 50%.

Etiwan of South Carolina

. . . Another Spensol User

LARGE QUANTITIES OF SPENSOL (Spencer Nitrogen Solutions) are produced each day in plants like this. Spensol is preferred by many mixers because of its demonstrated ability to produce well-conditioned fertilizers at low cost.



HERE'S AN EXAMPLE of how our Technical Service Department at Spencer may help you solve a production problem: Spencer's Floyd Miller designed and supervised installation of these dual tanks at the Etiwan plant in Charleston.

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Southeastern District Sales Office: 412 Chandler Bldg., Atlanta, Ga.
Works: Pittsburg, Kansas • Henderson, Ky. • Chicago, Ill.
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sary relief valves. Before installing any storage tank, a review of applicable state laws should be made to insure compliance.

Piping, fitting and valves for all types of solution should be, in order of preference, stainless steel, aluminum or black iron. Diaphragm valves are best, with lubricated plug-cock valves as second choice. All valves, piping and fittings should be specified for ammonia service. Measuring or weighing tanks should be of all-welded stainless steel or aluminum construction, equipped with pressure relief valves with free vents to the outside atmosphere. No copper, brass, bronze or similar alloy should be used anywhere in the system.

All of the producers of fertilizer ammoniating solutions maintain service departments to assist customers in the proper installation of equipment and in methods of handling their product, so it would be well for any user to take advantage of this free service when contemplating making new installations or modifying old ones.

There are entirely too many accidents resulting from working on and around tankcars and unloading racks. I am referring now to the purely physical-type accident resulting from falls, slipping, etc. Most of this type accident, as far as handling ammonia is concerned, result from improperly designed or poorly maintained unloading racks, improper tools, and shoddy shoes and clothing. The unloading rack should be sturdily constructed, having regulation railroad clearance, secure stairs with handrails and a hinged bridge also with handrails, so that the worker has safe, sure access to the car dome. A locker can usually be conveniently built under the rack in which should be kept the proper tools for connecting lines and the required safety equipment. A safety shower should be close by.

Since 15 to 20% concentractions of ammonia gas are flammable, no arc or acetylene cutting or welding should be performed on ammonia tanks or lines until they have been thoroughly purged.

There is no reason why ammonia or the ammonia solutions cannot be safely handled providing these cardinal rules for the handling of any hazardous liquid are observed:

APPROVED INSTALLATIONS
KNOWLEDGE OF PHYSICAL PROPERTIES
AVAILABLE SAFETY EQUIPMENT
COMPETENT OPERATORS.

Union Special Elects North President

William S. North, son of a former president, has been elected to head Union Special Machine Co., Chicago. A. M. Sheldon, who was made president in 1930 to succeed the late Francis S. North, has become Board Chairman. He joined Union Special in 1915 and worked up through the factory and sales to his present post.

William North joined the Company in 1935, spent considerable time in the development department, in the factory, and in the field. He became assistant general manager in 1947.

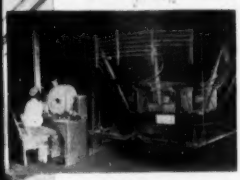
Union Special Exhibit At Packaging Exposition

Union Special Machine Company's Dubl-Tape bag closing unit is exhibited at the 21st National Packaging Exposition, in Atlantic City, April 1-4.

This equipment, which is for closing the tops of consumer size filled bags, consists of the bag closing machine, Style 21800 N, with sewing head, Style 60000 D, which sews a double tape to the top of the bag while trimming the excess top and clipping the ends of the tape. It is used on such products as chemicals, insecticides, fertilizers. This unit is one of the many types of bag closing machines which Union Special produces for closing all types of filled bags—cotton, burlap, jute, and paper.

Scheduled to be in attendance at Union Special's Booth No. 125 are Arthur J. Feigel, Sales Promotion Manager; Larry M. Brown, Manager, Product Application Department; Ben W. Merz, Manager, Philadelphia Office; and Jack H. Muir, Assistant Manager, Philadelphia Office.

SACKETT FERTILIZER PROCESSING SYSTEMS PAY OFF



Control Panel

These fast fertilizer processing systems have reduced production costs in some plants as much as 65% . . . An estimated cost savings included with a Sackett survey of your production operations may even exceed this figure.

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1. Eliminates waste of manpower.

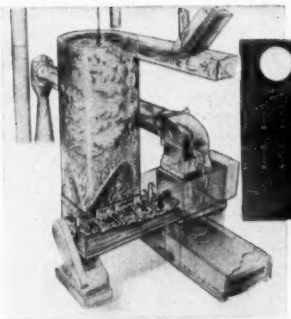
2. Fast-acting weigh valves and printed weigh record provides more rapid and accurate weighing.

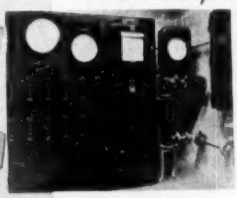
3. Circular design of storage hopper accelerates flow of ingredients through weigh valves . . . no corners or valley angles to retard flow of material.

4. Its compact design permits installation in existing buildings with minimum alterations.

5. The installation of this system does not, in any way, disturb existing mixing facilities.

Built in four sizes, 25 tons to 100 tons per hour.





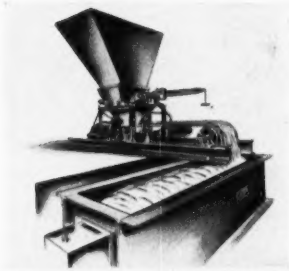
Central control panel shown above is nerve center of Super-Flo Process. Plant is operated from this point by one man.

SACKETT *Super-Flo*... A CONTINUOUS SUPERPHOSPHATE MANUFACTURING PROCESS

This new Sackett-conceived and developed process produces a superphosphate of premium quality in either powdered or granular form. Its complete mechanization and centralized panel control brings to the industry entirely new conceptions of high production speeds, low manufacturing costs and quality product control.

These Sackett patented processes are built in three sizes, 25 tons to 75 tons per hour.

Exclusive suspended acidulation produces highly converted superphosphate of excellent quality.



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The patented Sackett Continuous Ammoniation System is now being offered in four sizes with capacities ranging from 25 tons per hour to 100 tons per hour. This highly efficient method of ammoniating superphosphates and mixed goods with solutions offers many important advantages and is easily installed in connection with existing basing equipment. Higher ammoniation rates are made possible by its accurate proportioning of solids and solutions and lower reactive temperatures due to its exclusive aerating action which takes place during ammoniation. This system is also built in pressurized design for anhydrous ammonia or solutions having high vapor pressures.

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Okra NUTRITIONAL NEEDS

By J. B. Hester, A. B. Winters, R. O. Corbett*

Figure 1. Influence of excessive liming on oats. Judicious liming is important but excessive liming is bad.

Okra is, and has been, an important vegetable crop in the southern states. This vegetable crop[1] is a constituent of many canned products. Because of the importance of this crop in the diet of the American people, work was initiated several years ago to ascertain the methods of fertilization and production for maximum crop yield. A number of factors regarding crop yield became apparent from the study of okra production. Among these factors may be mentioned soil acidity, magnesium deficiency, maximum amount of fertilizer for optimum yield, fertilizer analysis, and methods of application.

Soils located in southern Georgia and other parts of the southern states in which okra is produced are generally associated with the Orangeburg, Tifton, Norfolk, Blakely, Magnolia, Ruston, and similar soils. These soils, for the most part, are acid in nature and low in available calcium and magnesium. A typical analysis of the soil would be pH 5.5, 500 pounds available calcium per acre, 150 pounds of magnesium, 1.5 to 2.0 per cent organic matter, and low available phosphorus and potash. These soils, without supplemental applications of fertilizer and liming materials, produce an extremely low yield. It is therefore pertinent that experiments be conducted on quantity of liming materials and fertilizer and the method of application.

Soil Acidity

Soil acidity within itself actually does not influence the yield of crops. However, the influence of soil acidity on the solubility of aluminum, iron, and manganese does influence the yield of crops growing upon the soil. Calcium deficiency is seldom observed in agronomic crops. However, calcium is a balance wheel in the soil in such a manner as to influence the available boron, manganese, iron, and molybdenum and likewise to control toxic concentrations of elements coming into solution such as aluminum and also manganese and iron. In lieu of this knowledge experimentation was inaugurated in the vicinity of Cairo, Georgia to ascertain the influence of applications of dolomitic limestone. It has been generally conceded that liming materials on the above mentioned types of soils were not beneficial nor necessary in crop production.

The findings of the present experimental work indicate that the use of 1000 pounds of dolomitic limestone (magnesium) on the basis of pre-application is desirable. When limestone at the rate of 1000 to 2000 pounds per acre was applied to the soil without the application of any fertilizer, the yield of okra was decreased. However, when fertilizer, on the basis of the analysis of 7-7-7, was added, the yield was increased. The most practical application was 1000 pounds per acre inasmuch as 2000 pounds per acre did not advance yield above the 1000-pound application and, in some cases, actually depressed the yield. It therefore appears from the question of soil acidity that the use of moderate applications of liming material (1000 pounds per acre) is desirable. Excessive liming of oats produced manganese deficiency (Figure 1).

Magnesium Deficiency

Magnesium is a constituent of chlorophyl molecules, that is, the green coloring matter of the plant. It is essential for crop growth. Many of the soils mentioned before have adequate magnesium for the average production of okra. When the yield exceeds average production, magnesium often becomes a limited factor. Magnesium limestone supplies magnesium in a relatively slowly available state. There are other sources of magnesium that can be added to the fertilizer such as magnesium sulfate, sulfate of potash-magnesia and other sources. It is pertinent to mention, however, that a moderate application of magnesium limestone will supplement the native soil-available magnesium to the point where it does not become a limiting factor in plant growth. Soil analysis clearly es-

(Continued on page 61)

*Jos. Campbell Co., Cairo, Georgia. H. R Madison assisted in obtaining the records

*Jos. Campbell Co., Cairo, Ga.

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Sewn Open Mouth

Flat Sewn Open Mouth

Flat Sewn Valve

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If your product fits into a bag — we'll make the bag to fit your product.

In the Field of ALLIED FARM CHEMICALS

NAC Offers Pesticide Speakers

National Agricultural Chemicals Association has organized a speakers bureau that is ready to meet a limited number of engagements to inform farm groups, scientists and others about pesticides. If you need help, write L. S. Hitchner, executive secretary, Barr Bldg., 910 17th St., B. W., Washington, D. C.

Wyandotte Establishes Insecticides Department

Wyandotte Chemical has created a new department to handle industrial insecticides, as the latest expansion move. By June it should be producing 300 tons of BHC and 130 of DDT monthly. Sales are being handled through the established district and branch offices.

Possible Solution To Insect Resistance Problem Is Found

Some new light has been shed on the ever-increasing problem of resistance of insect pests to chemicals used to control them. Experiments being carried on by two scientists, Dr. Raimon L. Beard and Neely Turner, both of The Connecticut ABS, have added considerably to the knowledge about the causes of resistance and offer a possible solution to the problem.

Insect resistance first came in for public attention a few years ago. Scientists and farmers met the problem by switching to still newer insecticides, which gave satisfactory control for a while but then, they, too, declined in fly-killing power. The phenomenon has been noted with other insects.

Up to now, it has been generally believed that the hardier insects survived the sprays and produced offspring which were, in turn, resistant.

Now Dr. Beard has found that insects are not fixed in their resistance to insecticides. That is, an individual insect may be highly resistant to an insecticide one day and, a few days later, may be easily killed by it.

Thus, it would seem simple to avoid build-up of resistance by avoiding the use of chemicals that remain toxic for a long time after application. The validity of this theory is borne out by the fact that farmers did not have trouble with resistance when they depended wholly on insecticides of the temporary type like rotenone and nicotine.

Working on the problem from another direction, Mr. Turner found a second way to circumvent the resistance problem. By using a combination of chemicals rather than a single insecticide, the chances of resistance build-up are diminished, since an insect resistant to one chemical is not necessarily resistant to another. This is the same approach used by medical men when human patients developed resistance to penicillin or other single antibiotic after being treated with it for long periods of time. The decline in treatment effectiveness was overcome by combining penicillin with other drugs.

Tests at the Connecticut Station have shown that two weak insecticides give as high a kill of insects as one strong one. Experiments now are aimed at finding good combinations for commercial use against specific insects.

Esso Helps Fight Fungi

A new class of organic chemicals developed at the Esso Laboratories of the Standard Oil Development Co., Linden, N. J. Synthesized there by Dr. A. R. Kittieson, one of 16 compounds named S.R.-406, has been extensively field-tested at various agricultural experiment stations in the United States, Canada, England, Denmark, France, and Latin America, in fighting fungi that destroy crops.

Checks Virus On Tobacco Plants

University of California College of Agriculture reports a growth hormone used to stimulate rooted cuttings will check tobacco mosiac virus infections in tobacco.

They found that naphthalene acetic acid holds down reproduction of this virus in about one-third of the amount found in untreated plant tissue.

Virus concentrations were determined by the amount of ultraviolet light absorbed. Further work is now under way to test the hormone on field grown plants and to discover new virus inhibiting material.

Aldrin Promises Better Crops

Increased yields and improved quality of vital food crops was forecast March 13, by F. W. Hatch, agricultural products manager for Shell Chemical Corporation. These results can be achieved, he said, through control by a new, potent insecticide, aldrin, of soil insects which attack corn, peanuts, sugar beets, sugar cane and small grains. The U. S. Department of Agriculture has just accepted aldrin for registration for these uses, following dramatic proof of its effectiveness by many experiment stations. (Acceptance for corn is at present limited to Iowa and adjacent states.)

Control of soil insects is one of the most promising fields for agricultural progress, Mr. Hatch explained. Damage to crops by above-groun insects is easily seen and has until recently been the primary concern of the farmer. Damage to plant roots by soil insects, while not so readily recognized, is often more wide-spread and serious, but has gone relatively unchecked because of lack of economical control methods.

In announcing U.S.D.A.'s acceptance of aldrin, which is available through all principal insecticide

manufacturers, Mr. Hatch pointed out that the new insecticide kills rootworms, wireworms, and white-grubs with a far smaller dosage than any previously known treatments, with resultant economies to the farmer.

Pennsalt Offers Service Bulletin On Insect Control

A new service bulletin entitled, "Insect Control on Crops, Shrubs, and Trees with Lindane," has been prepared by the Pennsylvania Salt Manufacturing Company's agricultural chemicals department.

The bulletin lists in chart form the host plant, insects which may be controlled with lindane, the recommended concentrations and suggestions for application. The instructions include formulations containing 1%, 20% and 25% lindane, which is a highly purified form of benzene hexachloride containing at least 99% of the active gamma isomer.

Information is also given on seed treatment for wireworm control with a wettable powder containing 25% lindane, and on the possible use of lindane in transplanting or setting water, for cabbage maggot and tobacco wireworm control.

A copy of the bulletin may be obtained by writing to Pennsalt Chemicals, Agricultural Chemicals Dept., 1000 Widener Bldg., Philadephia 7, Pa.

Powell Opens Omaha Plant

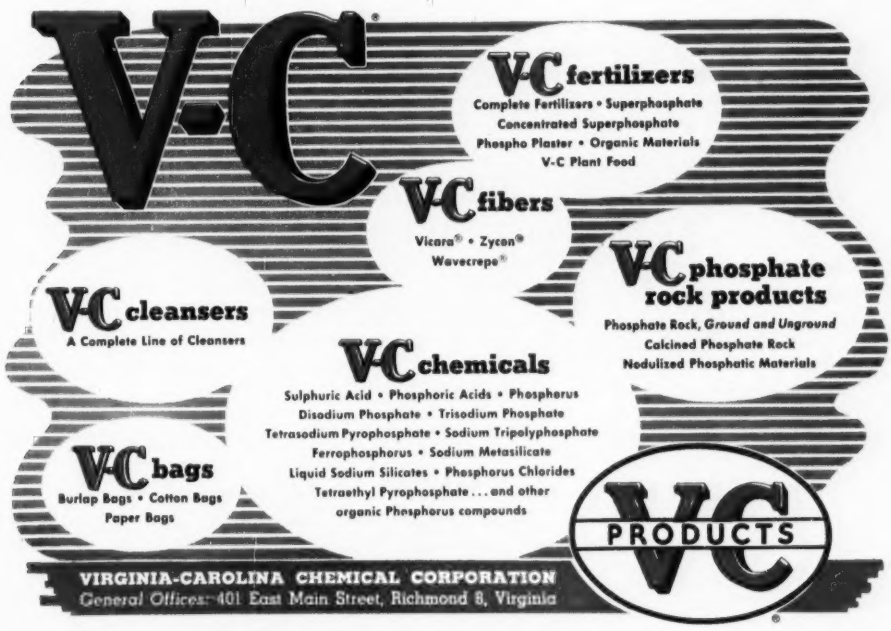
A new insecticide manufacturing plant in Omaha, Nebraska, has been announced by H. Alvin Smith, president, John Powell & Co., Inc., leading suppliers of insecticide concentrates.

The establishment of the Omaha plant is part of Powell's decentralization program, and is aimed at meeting specific regional needs with on-the-spot facilities. The new plant will have special equipment for manufacturing Parathion, DDT and 2,4-D formulations, as well as Toxaphene and Chlordane concentrates. These products are used in the midwestern states for control of Corn Borers, Green Bugs, Grasshoppers and other agricultural pests common to the region.

The location of the new plant will permit faster deliveries in the important agricultural area around Omaha. In many cases over-night deliveries will be made to meet sudden insect infestations, as have occurred in the past.

Mr. Smith also announced the appointment of Carl Schneider as Plant Manager.

Supplementing the production facilities at Omaha, a Regional Sales Office has been set up. Dr. Alfred Weed, Vice President in Charge of Sales, has named Douglas M. Malcolm, Jr., to head up this office. Mr. Malcolm's territory will include the states of North and South Dakota, Minnesota, Nebraska, Iowa, Kansas and Missouri.



Trying to Beat The Nitrogen Shortage!

Phillips is producing nitrogen fertilizer materials at full capacity. But even our tremendous rate of production isn't always sufficient to meet today's demand. We'll do our best for you. Keep us in mind if you need nitrogen in any form.

AMMONIUM SULFATE—Phillips *66* Ammonium Sulfate is a free-flowing 21% nitrogen material! Mixes easily! Uniform crystals resist caking! Ideal for high-analysis mixed goods! A fine direct application material!

AMMONIUM NITRATE—Phillips *66* Prilled Ammonium Nitrate contains 33% nitrogen. The small, coated prills or pellets resist caking . . . handle easily. Phillips *66* Prilled Ammonium Nitrate can be depended on for uniform, free-flowing properties and top-notch crop response.

NITROGEN SOLUTIONS—More N per dollar! Phillips *66* Nitrogen Solutions are well suited to the preparation of high-analysis fertilizers and the ammoniation of superphosphate. These three nitrogen solutions keep handling costs low . . . promote rapid, thorough curing!

ANHYDROUS AMMONIA—Tank car shipments of Anhydrous Ammonia (82% nitrogen) go out to Phillips contract customers from Phillips production facilities in the Texas Panhandle. Write our nearest district office for full information.

Phillips 66

PHILLIPS CHEMICAL COMPANY

A Subsidiary of Phillips Petroleum Company

FERTILIZER SALES DIVISION • BARTLESVILLE, OKLAHOMA

DISTRICT SALES OFFICES:

NORFOLK—610 Royster Bldg. • TAMPA—7 Terrace Office Bldg., 404 Marion St. • HOUSTON—604 City National Bank Bldg.
OMAHA—WOW Bldg. • AMARILLO—First National Bank Bldg. • LOS ANGELES—4521 Produce Plaza West • BARTLESVILLE—Adams Building

HUDSON
MULTI-WALL SACKS

PASTED AND SEWN—VALVE AND OPEN MOUTH

MEASURE UP TO YOUR MOST EXACTING SPECIFICATIONS

Hudson is able to deliver multi-wall sacks that live up to the letter of your specifications...*every time*. Here are the reasons:

1 Hudson has control over all the basic ingredients. Every step in manufacture—from the timber reserves to the finished sack—is under one ownership and management.

2 The Hudson mill is new. Here the most modern equipment that can be built turns out your sacks under regulated temperature and humidity. Electronic controls give a new meaning to the word "exact."

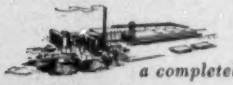
3 Tests, inspections, and double checks follow your sacks through the mill, with a relentless vigil.

4 Hudson is a veteran of 30 years of experience in the kraft field. The company understands your problems in packaging and knows why your specifications are *important*.

Order from Hudson, and be sure of sacks *when* you want them —the *way* you want them!

This young lady is making one of a series of detailed inspections that follow your multi-wall sack through the Hudson mill. It is just one of the assurances that every sack shipped to you is up to specifications.

Send today for informative literature on Hudson Multi-Wall Sacks. Just drop us a note.



a completely integrated mill

HUDSON PULP AND PAPER CORPORATION

Dept 152, 505 Park Avenue, New York 22, N.Y.

This is good news in agriculture and in industry. Increased availability of vital plant nutrients in the form of soluble inorganic salts for fertilizer solutions can mean new products and new markets for fertilizer manufacturers.

New emphasis is being placed upon WATER-SOLUBLE FERTILIZERS. Growers and manufacturers are developing new methods . . . new applications of high-analysis soluble plant foods which combine NITROGEN . . . PHOSPHORUS, POTASH and, in many cases, weed killers and insecticides, too.

MONSANTO, to help meet the increasing demands for plant foods, has increased quantities of four basic, soluble fertilizer chemicals . . . MONO AMMONIUM PHOSPHATE . . . DI AMMONIUM PHOSPHATE . . . MONO POTASSIUM PHOSPHATE . . . PHOSPHORIC ACID 75.0%.

New uses for WATER-SOLUBLE FERTILIZERS are proving profitable for growers . . . profitable for FERTILIZER MANUFACTURERS. Perhaps these products will fit into your production planning. Contact any District Sales Office, or write MONSANTO CHEMICAL COMPANY, Phosphate Division, 1700-C South Second Street, St. Louis 4, Mo.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto Canada Limited, Montreal.

MONSANTO PLANT NUTRIENT CHEMICALS			
	N	P_2O_5	K_2O
Mono Potassium Phosphate (Crystals)	—0—	51.6%	34.2%
Di Ammonium Phosphate (Crystals)	21.0%	53.85%	—0—
Mono Ammonium Phosphate (Crystals)	12.2%	61.61%	—0—
Phosphoric Acid (75.0%) (Liquid)	—0—	54.5%	—0—

One too many

Short supply is a happy state of affairs when a woman buys a hat.

In industry, too often it is a sword that hangs over the buyer's head. Executives who order more than 85 per cent of all Multiwall bags overwhelmingly specify* on-schedule delivery as the factor to which they give greatest weight.

Union Multiwalls are shipped from the world's largest pulp-to-container mill.

The pulp from which they are made comes from forests Union owns or manages. Your supply of Union Multiwalls is unlikely ever to be restricted because of raw material shortages.

When and if allocations are necessary, you can count on receiving your fair share.

These are among the reasons why, since World War II, major buyers have given dependable Union so proportionately great an increase in their Multiwall orders.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

*August, 1951 research study.

UNION BAG & PAPER CORPORATION • NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING

Mostly Personal

Victor A. Tiedjens has become head of the research department which is housed in the new plant building at Marion, O. announced by **Na-Churs Plant Food Company** (See Around the Map, Ohio) Mr. Tiedjens, recently director of the Virginia Truck Experiment Station, was formerly with the New Jersey AES.

* * *

Weller Noble, President and General Manager of **Pacific Guano Company,** has announced the following personnel changes.

On March 1 **Geo. P. Bloxham** joined the organization as assistant manager of the Southern Division. Mr. Bloxham is well known to members of the fertilizer industry, having previously been associated with **Wilson & Geo. Meyer Company** of San Francisco for many years.

Howard Conley has been appointed assistant general manager of the company and will have his headquarters at the Berkeley office in the near future.

J. J. Bingham has been appointed Manager of the **Insecticide Division** of the company with his headquarters also in Berkeley. Mr. Bingham for the past two years has had charge of insecticide sales for the Southern Division of the company.

* * *

Melvin H. Baker, board chairman of **National Gypsum,** Buffalo, N. Y., heads the special corporations section of the University of Buffalo fund drive. **Lewis R. Sanderson** has been elected for a three year term on the board of the Western New York Heart Association.

W. W. Harley, sales manager, and **Allen D. Brent,** production manager were made vice-presidents of **Southern Fertilizer and Chemical Co.,** Savannah, Ga. The full slate elected follows:

A. D. Strobhar, president; **W. Dewey Cooke,** vice president, secretary and treasurer; **Donald R. Livingston,** vice president; **W. W. Harley,** vice president — sales; **A. D. Brent,** vice president—production; **Henry F. Inglesby,** assistant treasurer; **Henry J. Sutcliffe,** assistant secretary; and **William Hugh Stephens,** assistant secretary.

* * *

O. A. Power, former manager of **Simplot Fertilizer,** has been made manager of the **Westvaco Division,** Food Machinery and Chemical Corporation, which is building a $15,000,000 project at Westvaco, Wyoming, for phosphorus production.

* * *

John H. Daughtridge, nitrogen products sales manager for **DuPont's** Polychemicals department, has been made assistant sales director of the department. **Dr. Frank G. Keenen,** his assistant, has been moved up to succeed Mr. Daughtridge. **Clarence D. Bell** will succeed Dr. Keenan.

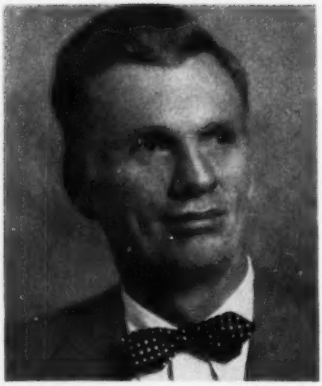
McKay Collette has been transferred to Sales Promotion in Wilmington, and **Vernon S. Peterson** will replace him in Kansas, Iowa, Illinois and Missouri.

* * *

Wymond Cabell, investment firm head, has become a member of the board of **Virginia-Carolina.**

* * *

J. W. Whitaker, manager of **Swift's** Winter Haven, Florida, plant food division, has received the 25-year pin. He joined them in 1927 as bookkeeper, stock clerk and paymaster in the Atlanta office.



W. R. Alstetter, new vice-president of NFA, coming there from USDA where he has been Deputy Director of the Office of Materials and Facilities, in charge of Fertilizer and Agricultural Chemical programs.

* * *

Charlie Burry, Naco, Jacksonville, is back on the job. He was laid up by an eye infection resulting from the extraction of a wisdom tooth. **Rawlin VanLandingham** is passing out cigars in honor of his new son.

* * *

Dr. Ernest W. Reid, president of **Corn Products Refining,** has been elected to the board of **Commercial Solvents.** He is holder of the Chemical Industries medal for 1951.

* * *

C. W. Loomis, vice-president and personnel director of Bemis Bro. Bag Co., was elected to the board. **F. V. Deaderick,** Eastern sales director, was made a vice-president.

* * *

R. D. McAusland has been made Director of Western Operations and **F. V. Deaderick** of Eastern Operations for **Bemis Bro. Bag Co.** Mr. McAusland has been with them for 52 years. Mr. Deaderick joined in 1918.

* * *

Leon E. Smith, formerly treasurer, has become president of **Consolidated Rendering,** Boston, filling

James H. Gillie, now General Sales Manager, Thurston Chemical. George Cupples has been named Director of Promotion; Perry Onstot is Agronomist; William Schaeffer is Advertising Manager.

Frank Colvan, who has been made vice-president of Naco Fertilizer. He is directing the introduction of their new liquid plant food concentrate, Nurish. (See Map, South Carolina)

Carl W. Tuohey, representative of The Frank G. Hough Co. for their District 2 which comprises New York, New Jersey, Pennsylvania, Virginia, Delaware, West Virginia and New England, replacing William Cornell, recalled to the Marines.

the vacancy caused by the death of **Harold E. Naugle.** He is succeeded by **John H. Downing.** A new member of the board is **Walter E. Meeken,** manager of the fertilizer department, who serves also on the NFA board.

* * *

Kenneth C. Towe has been elected to the presidency of **American Cyanamid,** to fill the vacancy caused by the death, January 22 of **Raymond C. Gaugler,** who had served only a few days more than one year in the post. Mr. Towe was a director.

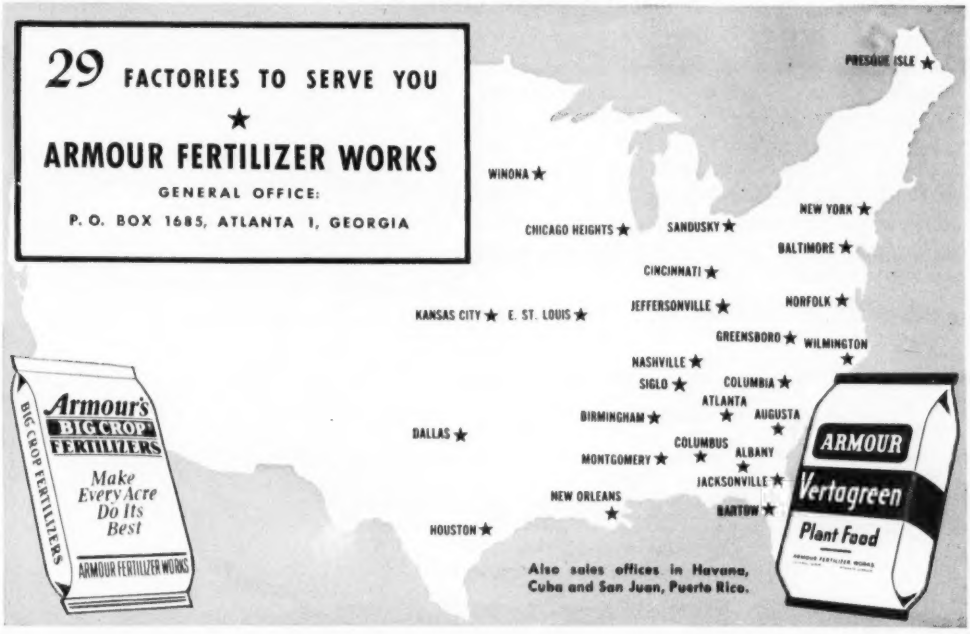
* * *

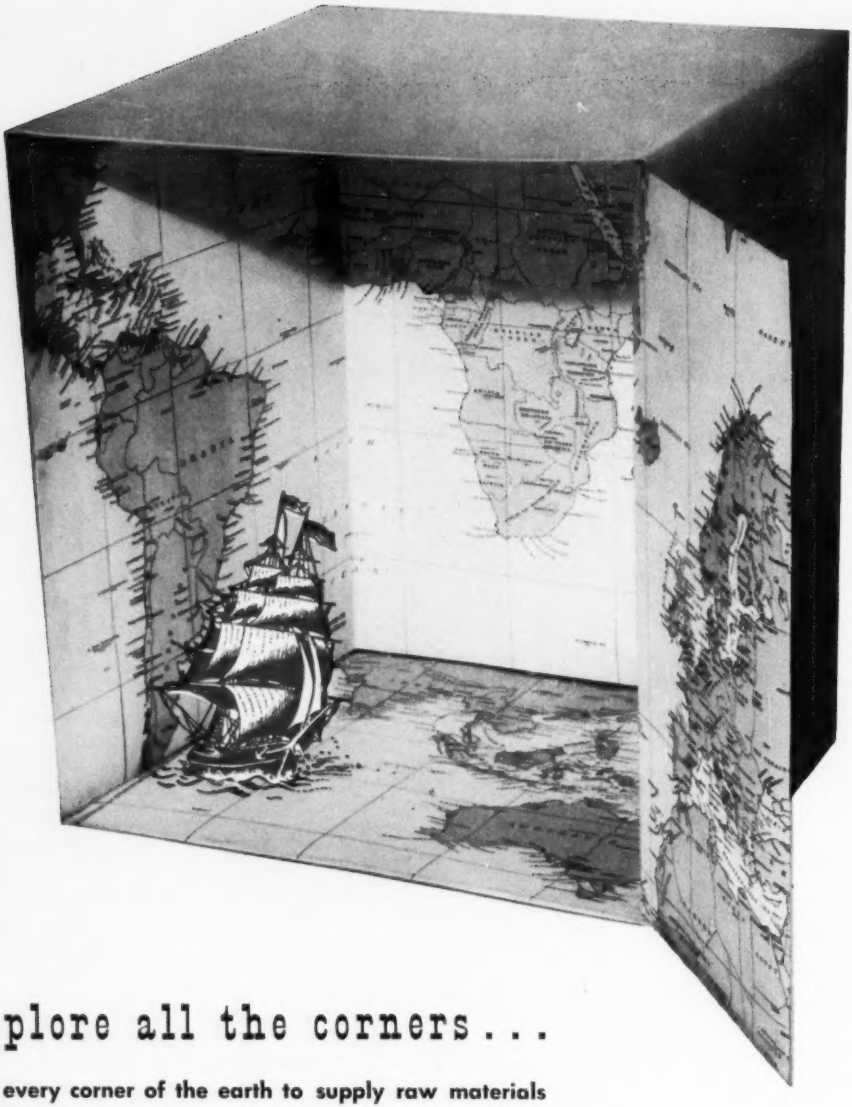
Maurice H. Lockwood, vice president in charge of the Plant Food Division of **International Minerals & Chemicals** has announced four appointments: **E. Meade Wilson** as area manager at Mulberry, Fla. **D. N. Barksdale** as his assistant. **W. P. Burke,** area credit manager, East Point, Ga., office, to district sales manager, Albany, Ga. **S. Ralph Smith,** sales representative at East Point, succeeds Mr. Burke.

G. Albert Woods, Carolinas representative of **Potash Company of America,** has been transferred to the Washington Office, and the Raleigh Office has been closed. Mr. Woods will continue in charge of the Carolinas, but will assist on other accounts as well.

* * *

William A. Schnell, 40 years with **Link-Belt** is now with **Consolidated Products Co.,** New York rebuilt chemical machinery dealers.





we explore all the corners . . .

We explore every corner of the earth to supply raw materials to manufacturers of fertilizers and agricultural chemicals. If you have a supply problem, write, wire or phone us today.

H. J. BAKER & BRO.

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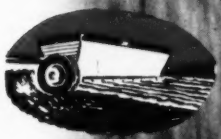
DAVISON

1. STORAGE CONTROL—will not cake or lump while in storage.



2. APPLICATION CONTROL—drills free and even . . . does not bridge over in the drill.

3. FOOD CONTROL—supplies uniform amount of plant food at desirable rates.

Davison's Granulated Superphosphate with 3-way control can mean added sales for you!

No longer is it necessary for you or the farmer to worry about lumping or caking . . . Davison's Granulated Superphosphate will store without becoming hard or caked. And when the farmer starts to apply Granulated Superphosphate in the field he will find there is no dusting nor will it bridge over in the drill. Granulated Superphosphate drills freely and evenly giving complete coverage. Because of the granular structure, plant food is released at desirable rates.

For added sales points be sure to get *Davison's Granulated Superphosphate with the 3-way control!*

Progress Through Chemistry

THE DAVISON CHEMICAL CORPORATION

Baltimore 3, Maryland

PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, SILICOFLUORIDES AND FERTILIZERS

Around the Map

ARIZONA

Mathieson Chemical Corp. has bought the fertilizer division of **Tovrea Land & Cattle Co.,** Phoenix. **Phil Tovrea** and sons, **Phil, Jr.** and **Ed,** want to devote their full time to their big livestock feeding pens. The transaction gives Mathieson a fertilizer and insecticide plant, warehouse storage space, and a going distributive organization, headed by **John Randall,** who has been retained by Mathieson with instructions to build up the business.

* * *

Spray Chemical Corp. is said to be planning enlargement of its branch at Phoenix with capacity to mix fertilizers and insecticides for the Arizona, New Mexico and Rio Grande Valley markets.

CALIFORNIA

American Potash & Chemical are now producing Tronabar in commercial qualities at their Trona plant. Tronabar is crude Pentahydrate Borax, a source of boron.

FLORIDA

American Cyanamid has installed a new storage system at its Brewster plant. 36-inch conveyor belts take 800 tons an hour from the track hoppers to an 80 foot stacker which swings in a wide semi-circle, remotely controlled, and deposits the various grades of rock on the proper piles. Below these are openings to a continuous underground tunnel, controlled by electric gates which let the type of rock desired flow to conveyors. Control of the gates blends the rock as it travels toward the plant. The stacker was designed by **Jeffrey Mfg. Co.,** Columbus, O.

* * *

Ralph E. Mills Co., Salem, Virginia, are about to open their facilities for mining and crushing of lime rock near Branford. **W. E. Edwards** will be in charge of the plant, which will be operated as **Suwanee Lime Products Co.** The plant is capable of handling 30 cars per day, and is located on property estimated to contain seven million tons of lime rock.

GEORGIA

Smith and Kelly, importers, suffered a severe fire loss when two dock-side warehouses in Savannah, loaded with Chilean Nitrate, burned March 27 at a total estimated loss of $750,000. $400,000 of this was the nitrate.

* * *

Southern Fertilizer and Chemical, Savannah, has contracted to supply USDA with more than $250,000 of fertilizer.

* * *

Armour Fertilizer has launched a very dramatic display for Vertagreen. The promotion developed by **Einson-Freeman Co.,** consists of a gigantic red rose, springing from a Vertagreen package. The flower, on its 4-foot stem, is attached with scotch tape to the store window, and attracts much attention.

ILLINOIS

Smith Douglass' plant at Streator recently entertained the adult farm class and the high school agricultural class from the Lexington school. After a plant tour a corn-growing motion picture was shown to each group, and a question and answer period was held.

IOWA

Consumers Cooperative, Kansas City, have received approval from NPA for the construction of a $16,000,000 plant at Lawrence, for the production of nitrogen. Iowa farmers have already raised $500,000 of the needed capital. **Howard A. Cowden,** president, says the plant will serve eight mid-West states.

LOUISIANA

Nitromonia, Inc. fertilizers, Covington, have filed incorporation papers, with a capital stock of $2,000.

MINNESOTA

Fulton Bag & Cotton Mills, Atlanta, Georgia, have opened a new plant at Crystal, according to Chairman **Norman E. Elsas.**

Fulton's plant at Crystal is one of the most modern textile bag manufacturing operations. The company will make all types of cotton and burlap bags, with the newest and most efficient type of machinery.

August Denk, who has been with the Fulton organization since 1916, will manage the Crystal operations, as he has in Minneapolis for over ten years. Sales Manager is **Gene DuBois** who has been with the company for more than twenty-five years. Jack C. Baker is superintendent of the Crystal Plant.

Speaking of the new plant, Mr. Elsas said, "When we planned the Crystal operation we endeavored to design a plant based on our more than eighty-four years of experience in textile bag manufacturing. This factory will utilize the most modern equipment and will produce the very finest textile products possible. Along with our traditionally high quality, we want to be in position to give all our customers the finest service in Fulton's history. We feel sure that we will achieve these goals."

Other Fulton plants are located at Atlanta, St. Louis, Kansas City,

14

MORE Fertilizer Plants Have Chosen

D-K

Cluster Hoppers

because

(1) D-K HOPPERS
Save Labor

Normal operation requires only 4 men—two men operating pay-loaders, one man operating swivel chute and one man weighing.

(2) D-K HOPPERS
Speed up Operation. Twice the material handled in half the time

(3) D-K HOPPERS
Increase capacity by 50%

(4) D-K HOPPERS
Cost Less

Also Manufacture Complete Line of Fertilizer Equipment

Write for Bulletin

DAVIDSON-KENNEDY CO.

P.O. Box 97 **Station D**
ATLANTA, Ga.

potato plants showing magnesium deficiency. The breakdown of tissues, like the loss of green color, starts at tip of leaf. Terminal leaflet is most severely affected.

Fifth in a series of six advertisements showing magnesium deficiency symptoms in tobacco, cotton, grapefruit, corn, potatoes and oats.

you can supply magnesium in the most effective way in mixed fertilizers with Sul-Po-Mag®

Water-Soluble
Double Sulfate of Potash-Magnesia

In many crop growing areas, the vital need for an adequate supply of magnesium is becoming increasingly more evident. A great number of farmers have learned from actual experience that when sufficient amounts of this important plant nutrient are applied to magnesium-deficient soils, large acre yields of profitable, high quality crops can be grown.

That is why more and more fertilizer manufacturers are including *Sul-Po-Mag* in the fertilizer they mix for crops grown on magnesium-deficient soils.

Sul-Po-Mag, produced exclusively by *International*, is a properly balanced combination of potash and magnesium, both water-soluble and immediately available to the crops. It is by far the most practical and economical way to supply magnesium in complete plant foods or for direct application. Today *International* is producing more *Sul-Po-Mag* than ever before to fill the growing need for magnesium in this convenient form.

SUL-PO-MAG (Water-Soluble Double Sulfate of Potash-Magnesia)
MURIATE OF POTASH SULFATE OF POTASH

THIS IS WHY GROWING PLANTS MUST HAVE MAGNESIUM

- It is required in the life process which gives plants their green color and keeps them growing.
- Promotes earlier maturity on soils low in magnesium.
- Enables crops to make better use of other plant foods.
- Carries phosphurus to the growing and fruiting parts of the plant.
- Necessary for the development of seed.
- Promotes the formation of proteins in growing crops.
- Stimulates growth of soil bacteria and fixation of nitrogen by leaumes.
- Increases the plant's resistance to diseases.

WRITE TODAY FOR YOUR FREE

COPY OF THIS NEW BOOK

POTASH DIVISION International MINERALS & CHEMICALS **INTERNATIONAL MINERALS & CHEMICAL CORPORATION**
General Offices: 20 North Wacker Drive, Chicago 6

Kans., New Orleans, Dallas, Denver, and Los Angeles.

MISSISSIPPI

Prairie Liquid Fertilizer Corp., Aberdeen, with storage plants at Amory, Gibson and Macon, are installing a 30,000 gallon storage unit at Columbus. They are agents for **Mississippi Chemical Corp.,** the only farmer-owned producer of anhydrous ammonia.

MISSOURI

Monsanto Chemical plans to make Krilium at several plants, rather than build a new plant for it at this time, according to President **Charles Allen Thomas.** This will permit commercial production at the earliest possible date, he told the stockholders. All 10 board members were re-elected.

* * *

Green Diamond Fertilizer plant, New Florence, owned by the **Farm Bureau Service,** was hit by fire which destroyed the storage shed and contents, without reaching the main plant. **Raymond Wells,** on the scene, said the damage would run into many thousands, but **Frank Johnson,** secretary-treasurer explained that the loss was fully covered by insurance, and that the plant should be able to take care of the Spring rush.

NEW YORK

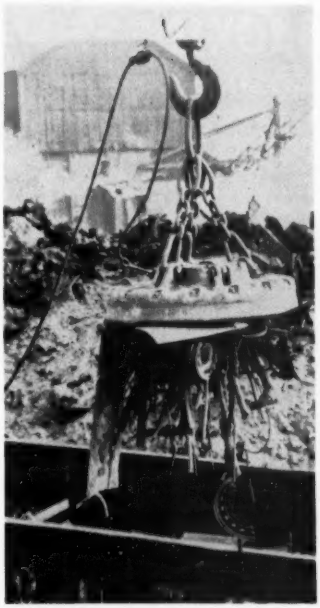
National Gypsum, Buffalo, is doubling its authorized common shares, and planning to provide options to company executives which will permit them to buy a total of 50,000 shares.

OHIO

Na-Churs Plant Food Company, Marion, has announced a new, modern plant of steel and masonry, covering 35,000 square feet. **Ben Peterson** is founder. The new building contains a research laboratory, which will be headed by **Victor A. Tiedjens.** (*See Personals*)

OKLAHOMA

Oklahoma Fertilizer Co., Oklahoma City, began construction



BREAD UPON THE WATERS

Here are the remains of a huge, obsolete water tank, turned into scrap by Plasteel Products. Appropriately the resulting carload of essential material will help build a plant where 230,000 square feet of Plasteel roofing and siding are going up.

March 3 on their $300,000 fertilizer plant. It is expected to be in production by July with 20,000 tons scheduled the first year, and a capacity of 50,000 annual tons. According to vice-president and general manager **C. C. Crawford** the plant is to be highly mechanized, requiring only 30 workers. Mr. Crawford is president of **Sunset Fertilizer,** Bartlesville. President **Lester E. Cox,** secretary **J. M. Griffin** are officers of **Modern Tractor and Supply Co.,** Springfield, Mo.

* * *

Oklahoma Anhydrous Ammonia Co., Muskogee, which began operation in January 1951, is planning to double its operation. Owners are **Pete Jones, Phil Houser, Roy Piland** and **Alex Tarochione.** Mr. Jones is president. The others serve as directors.

SOUTH CAROLINA

Naco Fertilizer's plant and home office in Charleston were recently visited by Fortune Magazine researchers, doing a story on **W. R. Grace & Co.** They were conducted on the tour by vice-president **Bachman S. Smith.**

* * *

Naco Fertilizer's test in California having proved successful, they are now distributing their water soluble plant food, Nurish, through four mail-order nursery concerns. The formula was developed under the supervision of **Dr. Frank Parker,** USDA Beltsville, and by the **Batelle Memorial Institute,** Columbus, O. A $250,000 national advertising campaign, directed by **Frank Colvan,** newly elected vice president is getting under way in magazines and newspapers. The advertising is being prepared by **Kelly, Nason, Inc.,** New York advertising agency.

TENNESSEE

Tennessee Plant Food., Clarksville, has been sold to a group including **B. C. Milner,** New York, and Justin Pottern, Nashville. The reported price was $75,000. The new owners, while continuing mixed fertilizer production, will also carry out pilot-plant experiments on a process eliminating the use of sulphuric acid, which laboratory tests are said to have proven successful in the production of a complete fertilizer. Pilot-plant success may result in extensive expansion of the Clarksville unit. The process is based on kiln-drying Tennessee dolomite, coal dust and ammonia sulfate.

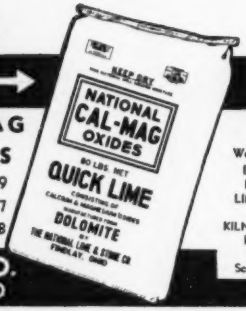
* * *

Ruhm Phosphate & Chemical, Columbia, owned by **Oliver M. Babcock,** and located on the 35-acre site formerly occupied by **Franklin Limestone Co.,** has begun operation of its new raw ground rock phosphate plant. **Bruce Huff** is plant manager.

TEXAS

Phillips Chemical has begun operation of its sulphur extraction operation near Goldsmith, and expects to recover 120 tons of sulphur daily

CAL-MAG OXIDES
CUT YOUR COSTS WITH



Unexcelled for its superior Dehydrating, Neutralizing, and Curing factors in the preparation of better fertilizers. Write for complete information.

PROMPT SHIPMENTS

Three railroads serve our Carey, Ohio plant--assuring prompt delivery--everywhere.

CAL-MAG OXIDES

MgO	40.39
CaO	58.07
TNP	203.88

We Also Produce
DOLOMITIC HYDRATED LIME (165 TNP)
and
KILN DRIED RAW DOLOMITE (107 TNP)
Screened to size

The NATIONAL LIME and STONE CO.
General Offices • • • • • FINDLAY, OHIO

from natural gas. A second plant is under construction in Crane County. The sulphur will be trucked to Fort Worth for conversion to acid, and subsequent production of ammonia sulfate at Houston.

• • •

Texas City Chemicals broke ground March 8 for their $7,500,000 dicalcium phosphate plant at Texas City. The plant is located on a 100-acre site, near **Carbide and Carbon Chemical's** plant, from which surplus sulphuric will be obtained. Interested Texans include **W. L. Pickens** and **S. Jack Winfrey**, both Dallas oil men; **R. L. Wheelock, Sr.**, Corsicana oil operator, and **H. H. Coffield** of Rockdale.

• • •

San Jacinto Chemical, will be expanded to recover 11,500 additional tons of nitrogen annually, under approval for rapid tax write-off of the $900,000 expansion investment. Present capacity is 70 daily tons of anhydrous ammonia. The plant is located on the San Jacinto Ordnance Depot property.

• • •

Mid-West Feed Yards, San Angelo, are shipping manure they used to give away or sell at 25¢ a pickup load. It is dried, to remove excess mosture and kill weed seeds, finely ground and packed in bags ranging from 100 pounds to 2 pounds. Sheep manure and cattle manure are both available. Owners are **Fred Ball, Herman Carter**, and **Swayne Dudley**. Among others, **Sears, Roebuck** have placed extensive orders.

• • •

The Hou-Actinite plant, Dallas community sewage conversion operation, is in danger of a shutdown due to the shortage of feric bichloride. Chief Design Engineer **W. E. White** is searching for a substitute chemical that will be economically practical.

Lone Star Feed and Fertilizer Co., Nacodoches, is again sponsoring a corn contest for 4-H, Future Farmers and G.I.'s in the veterans' agricultural classes. Judging will take place in the Fall. **M. S. Wright** is the owner.

VIRGINIA

Virginia-Carolina has a Chemical Corps contract for more than $250,000 of white phosphorus.

• • •

Rich-Gro Tobacco Products Co., Richmond, has been chartered to produce an organic mulch from granulated leaf tobacco stems. Officers of the company are **H. Graham Buchanan, III**, president; **William J. Williams**, vice-president, and **Tazewell Carrington**, chairman of the board of directors. Maximum capitalization is set at $25,000.

• • •

Liberty Limestone Corp., Rocky Point, suffered a $150,000 fire March

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HEAVY DUTY MULTI-WALL PAPER BAGS
OFFER DEPENDABLE PROTECTION FOR
YOUR FERTILIZER
THE JAITE COMPANY
"Manufacturers of Paper and Paper Bags"
JAITE, OHIO

"IT'S IN THE J BAG"
SINCE 1905

CLARENCE CHASE

Fertilizing pastures with 10-10-10 produced an extra $90 worth of dairy feed per acre for Gale and Clarence Chase,

SUN PRAIRIE, WIS.

THE CHASE BROTHERS of Sun Prairie, Wisconsin were among farmers who cooperated in the pasture improvement program sponsored by the University of Wisconsin under the Direction of C. J. Chapman, Professor of Soils. Here's their report:

"We fertilized part of our pasture last spring with 10-10-10 at about 500 pounds per acre. The growth of grass was so rank we could have cut a hay crop by the middle of June.

"In a demonstration set up on our pasture by the county agricultural agent, yields were taken. The unfertilized area made 2531 pounds of dry material per acre, and the fertilized made 5737 pounds per acre, an increase of 2905 pounds. This extra feed was the equivalent of 16-18% dairy feed which, at $60 a ton, would be worth about $90."

GALE CHASE

Bigger yields for farmers mean better business for you

• High-nitrogen mixed fertilizers have proved again and again that they pay their own way and give the user a nice profit to spare. As farmers learn more about their benefits, demand goes up and up.

To give your customers the most effective high-nitrogen fertilizers, use U·S·S Ammonium Sulphate for a major part of the nitrogen content. It's a dry, free-running material that stands up well in storage and performs well in distributing equipment. Its all-ammonia nitrogen won't leach, yet becomes readily available during the growing season.

Promotion efforts you put behind high-nitrogen fertilizers containing U·S·S Ammonium Sulphate will yield big returns. You and your dealers can recommend it for pastures, corn, wheat and other small grain. The spring fertilizer season is at its height; get your share of this business. United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.

U·S·S AMMONIUM SULPHATE

USS

UNITED STATES STEEL

18, which destroyed the grinding plant, and ruined the machinery. The crusher unit was not damaged. The concern owns another plant near Buchanan. **J. C. Lawrence,** plant manager, says the fire originated when the lime furnace became overheated and ignited the wood siding of the building. The damaged section will probably be rebuilt.

WEST VIRGINIA

Mathieson Chemical has made good its promise, made last December, to have in production by March 1 the Morgantown anhydrous ammonia plant on which the Army awarded them a 5-year lease. Actually the production began a day early, on February 29. The plant is one of the largest ammonia producers in the country, capable of 200,000 annual tons, plus by-products.

WISCONSIN

Forkin Phosphate, Green Bay, kept a keen eye on the direction of the wind from February 9, when the fume eliminator broke down until March 17 when the new one arrived, and shut down whenever a North wind blew fumes over the nearby residences and industries.

* * *

Milwaukee may soon be extracting Vitamin B-12 from its Milorganite sewage operation. The extraction of the valuable vitamin, said to be worth a million dollars a year to Milwaukee, will not injure the plant food value of the basic product, which runs to 65,000 annual tons. **Raymond Leary** is chief engineer.

AUSTRALIA

The Government, disturbed by falling food production, and wishing to expand it, recognizes that increased production of superphosphate will be necessary. The agricultural council has set a two-year target for the conversion of sulphuric plants from the use of imported sulphur to local pyrites, but failed to say how the result was to be accomplished. **New Zealand's** Government, with a new sulphuric acid plant planned for Aukland, is now negotiating with Australian authorities for regular shipments of pyrites. The new plant is expected to care for all the sulphuric acid needed by the three Aukland fertilizer plants.

CANADA

Shell Oil of Canada has its Juping Pound, Alberta, plant in operation, recovering sulphur from the hydrogen sulfide content of natural gas, and expects to produce at least 9,000 annual tons.

* * *

Swift Canadian Company, Toronto, is reported to be negotiating with the **James Milling and Supply Co.** for the purchase of their plant at Wyoming, which they plan to expand.

EGYPT

Wholly owned by Egyptians, the new 20,000 ton fertilizer plant at Suez has been completed. Plans are being drawn for another, to be located near Aswan, to produce 370,000 tons of nitro-lime fertilizer. Egypt's annual requirements are around 700,000 tons.

GERMANY

Ammonia Scholven-Chemi AG, Gelsenkirchen, has resumed the production of ammonia, with present volume set at 30,000 annual tons.

INDIA

Pakistan's Industrial Development Corporation has reports from **Power Gas Corporation,** UK and USA, and the Belgian **Chemique** which should lead to a 50,000 ton fertilizer plant using Pakistan coal as a raw material.

* * *

Sindri Fertiliser Factory the $48,300,00 plant erected with US and British private capital assistance, was formerly opened March 2 by Prime Minister Nehru. The plant has been test-operating since October 30, and has produced more than 20,000 tons of ammonium sulphate. 1,000 daily tons is its rated capacity. Negotiations are under way to expand the plant to produce 500 daily tons of urea, and for the construction of another plant costing ten million dollars at Mysore.

India is entering into a program of irrigation. 81% of the land depends on the vagaries of the monsoon, facing the twin risks of drought and flood. As a result India has been forced to import a minimum of 6,000,000 tons of grains annually to feed the population which is growing at the rate of 4,000,000 a year. The irrigation and reclamation projects are expected to boost India's annual food yield by 7,200,000 tons by 1956.

ISRAEL

Fertilizers and Chemicals, Ltd., Haifa, a $500,000,000 plant erected with the help of American capital via the State of Israel Independence Bond Issue, is using the rich deposits of the new State, and supplying food production that was sorely needed.

SOUTH AMERICA

Chemical Construction Corp. is actively considering the construction of an $8,000,000 ammonia and nitrogen fertilizer plant near Barrancabermeja, Colombia. Natural gas fields nearby would supply the major raw material.

USDA Reports Pesticide Need

A nationwide and state by state survey of the 54 pesticide chemicals required for this season has been completed by USDA, and shows requirements to be 9% higher than for last season. The survey will be used as a base for supporting the USDA claims to defense agencies for chemicals required by agriculture, under the higher production goals which farmers have been asked to attain this year.

The estimated requirement for pesticides which have been used over a relatively long period remain rather stable, the report says, while those for the newer crop protectors continue to increase.

STEDMAN FERTILIZER PLANT EQUIPMENT

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DEPENDABLE FOR MORE THAN 60 YEARS

All Steel Self-Contained Fertilizer Mixing and Bagging Units

Batch Mixers — Dry Batching

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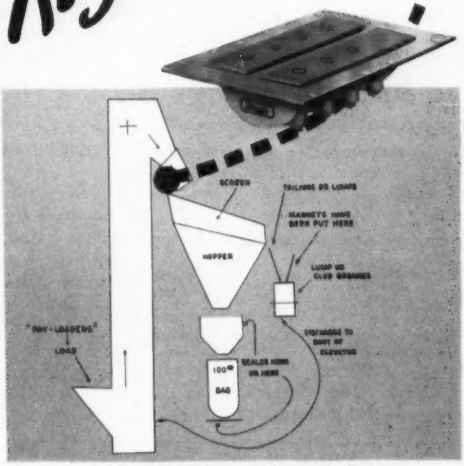

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A non-electric Perma-Plate magnet in the discharge chute of your bagging mill elevator can be a profitable investment.

HOW? By removing the nuts, nails, bolts, etc. often found in fertilizer.

WHY? To protect your machinery as well as your customers. In addition, a U. S. Dept. of Agriculture study shows many fertilizer plant explosions are set-off by sparks caused by tramp iron in grinding machinery. A Perma-Plate could prevent this.

THE ANSWER. Dings Perma-Plate magnets are low cost, non-electric, guaranteed permanent. No magnet of this type is more powerful. No electrical accessories whatever are needed. The magnet is simple to install. It will pay you to investigate today.

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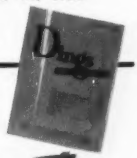
World's Largest Exclusive Builder of Magnetic Separators for All Industry.



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contains all the reasons why Perma-Plates are an excellent investment for you.

Dings Magnets

SOUTHERN STATES PHOSPHATE and FERTILIZER CO.
SAVANNAH, GEORGIA
Manufacturers of SULPHURIC ACID, SUPERPHOSPHATE, COMPLETE FERTILIZERS
and ALL TYPES OF BASE GOODS
EXPORT ORDERS SOLICITED

OBITUARIES

W. O. Bradford, 54, Northern division superintendent for F. S. Royster, suddenly February 1, while visiting relatives.

Robert C. Charlton, 54, chief chemist and director of chemical control, American Agricultural Chemical Co., March 25, in New York.

Mrs. Ralph Fraser, wife of the Summers Fertilizer vice-president, March 10 at Bangor, Maine.

Raymond C. Gaugler, 59, president American Cynamid since 1951, January 11 of cerebral hemorrhage.

J. M. Gibson, for many years in charge of fertilizer production for Cotton Products Association, Atlanta, Ga., January 4.

H. Hiter Harris, 58, member of the Virginia-Carolina board, January 13 of a heart attack.

Harry Langhorst, manager of the American Cyanamid insecticide department, prominent in NACA, January 19 after a long illness.

John J. McInnis, 45, president of the Eagle Rock Lime Company, Eagle Rock, Virginia, February 28, after a two-month illness.

Howard Marshutz, 54, since 1916 with Bemis Bro. Bag Co., and since 1943 their supervisor of waterproof sales, died March 10 of complications resulting from an automobile accident.

Harold A. Naugle, president Consolidated Rendering, Boston, January 22.

Gabriel H. Schoen, 50, president for 20 years of Schoen Brothers and of POM Chemical Industries, Inc., died March 20 in Atlanta.

J. Frick Tyler, vice president Tyler Grain & Fertilizer Co., Wooster, Ohio, died March 8.

Worth Looking Into...

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FURFURAL RESIDUE
An Inexpensive Organic Conditioner
Speeds up Curing
Helps Prevent Caking
Provides Bulk
Sold in volume the year around
Sterilized—Freed from plant diseases, insects, seeds and other similar contaminants
Used by leading Fertilizer Manufacturers
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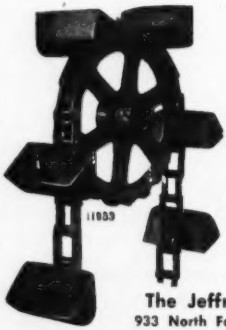

PERFORMANCE
And reduced maintenance costs are essential. Jeffrey Chains, Sprockets and Buckets are the logical choice in plants where the corrosive action of superphosphate 'tests the metal'. You take no chances with Jeffrey Chains and 'CHAIN-SAVER' Sprockets on the job. Investigate. Also Pulverizers, Conveyors, Elevators, Feeders, etc.
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Main Office: Savannah, Georgia

Superphosphate — Sulphuric Acid — Complete Fertilizers
Ammoniated Superphosphate

Export — Import

Plants: Savannah, Ga., Atlanta, Ga.,
Charleston, S. C., Roebuck, S. C.

Super Production Continues Down

Slowed down by the short supply of sulfur, the superphosphate makers—normal and concentrated alike—made less superphosphate in January, 1952, than during the same month a year ago, according to a compilation of manufacturer's reports received by The National Fertilizer Association and the Bureau of the Census.

January production of all superphosphate, 18% A. P. A. basis, was 962,000 short tons, compared to the 986,000 tons made in January, 1951—a drop of 2.4 percent. Production of concentrated superphosphate during the same periods was off 8 percent, from 63,000 tons produced in January a year ago to 58,000 tons made during the first month of this year.

Tax Tag Sales Hold Steady

February, 1952, sales of fertilizer tax tags and reports of shipments were equivalent to 858,000 tons of fertilizer, 10,000 tons greater than during the same month in 1951, according to The National Fertilizer Association, Washington, D. C.

Tax tag sales for the first 7 months of the fertilizer year are off 10 percent compared to the like period of the preceding year. July-January, 1951-52, tag sales and reports of shipments are 4,360,000 short tons compared to 4,772,000 tons during the like 7 months of the 1950-51 period.

Alabama has changed its method of reporting tax tag sales to NFA. Because of this, the format of the tag sales service letter has been revised, to provide even more information.

U. S. SUPERPHOSPHATE SUMMARIES, in Thousands of Short Tons
Based on Data for 205 Plants, Representing Total U. S. Production
Compiled from Reports Submitted to The National Fertilizer Association and a Summary of Reports Submitted to the Bureau of the Census

	JANUARY, 1952			Total, 18% APA Basis				Conc. (45% APA)	
	Normal 18% APA Basis	Wet Base 18% APA Basis	Conc. 45% APA Basis		JANUARY			JANUARY	
				1952	1951	1950	1949	1952	1951
Stocks, first of period	1,068	18	66	1,252	1,207	1,421	1,408	66	55
Production	809	7	58	962	986	803	840	58	63
Received from other plants	30			30	11	12	11		
Book adjustments	+8			8	+5	3	−2		
Total supply	1,915	25	124	2,252	2,209	2,239	2,257	124	118
Shipments	407	3	60	559	575	461	505	60	57
Used in reporting plants	396	2	1	400	440	282	365	1	1
Total disposition	803	5	61	959	1,015	743	870	61	58
Stocks, end of period	1,112	20	63	1,293	1,194	1,496	1,387	63	60

FERTILIZER TAX TAG SALES AND REPORTED SHIPMENTS
(In Thousands of Equivalent Short Tons)
Compiled by The National Fertilizer Association

STATE	February		January		Oct.-Nov.-Dec.		July-January	
	1952	1951	1952	1951	1951	1950	1951-52	1950-51
Virginia					111	76		
N. Carolina			232	338	223	286	549	729
S. Carolina	164	159	129	189	189	224	388	497
Georgia	106	183	82	256	200	212	334	535
Florida	136	126	162	153	398	367	712	681
Alabama			107	56	145	159	335	283
Tennessee	43	57	20	21	134	66	228	141
Arkansas	30	42	18	40	42	46	82	116
Louisiana	40	40	29	43	38	50	97	117
Texas	71	52	58	61	143	161	280	318
Oklahoma			11	12	26	22	75	68
TOTAL SOUTH	590	659	848	1,169	1,649	1,669	3,080	3,485
Indiana	91	77	155	128	287	281	639	624
Kentucky	84	61	83	95	124	130	284	303
Missouri	93	51	66	122	123	91	357	360
TOTAL MIDWEST	268	189	304	345	534	502	1,280	1,287
California					194	174		
TOTAL OTHER					194	174		
GRAND TOTAL	858	848	1,152	1,514	2,377	2,345	4,360	4,772

Irrigation "MADE" THIS TEXAS

By LURON BROWN

The Plainsman Supply Company was launched in 1947 as strictly a commercial fertilizer business. The entire stock in trade consisted of a car load of phosphate. The business location was a railroad siding.

Today the Plainview, Texas, enterprise is one of the biggest insecticide manufacturing and commercial fertilization distribution concerns in the Panhandle Plains region.

Three years of progress, not without some healthy growing pains, has ballooned the business beyond the owners' fondest expectations.

Plainview is situated in the heart of the High Plains shallow water irrigation district and irrigation has largely accounted for Plainsman Supply's phenomenal growth, as it has accounted for the tremendous enhancement of agricultural pursuits.

In the first place, irrigation has caused more rapid depletion of soil fertility than occurred under dry land methods. Before irrigation came into its own, insects were conspicuous only by their absence on the Plains. But as irrigation increased, so did insects, and now farmers must practice vigilance and spend money to protect crops if the fields are to reward their industry.

During the first twelve months Plainsman Supply was in operation it supplied commercial fertilizer to 1,000 acres of land. Before side dressing operations are completed this summer, application is expected to be made to 30,000 acres.

Harry Igo, the operating partner, and a former assistant county agriculture agent with headquarters in Plainview, and his 22 employees are the busiest people in town during the months when commercial fertilizers and insecticides are in demand. His field men and technicians are on twenty-four hour a day call.

Plainsman's first home was a small sheet metal building. After only a few months' operation, a large warehouse was constructed adjoining the original structure and comfortable office quarters were added.

In a rapid fire expansion program that assured its keeping abreast of the commercial fertilizer and insecticide demands of the irrigation belt and a rapidly expanding business in this and other states, Plainsman Supply added equipment that made it a plant unique in its fields. Installed were a dust blending unit with a capacity of 180,000 pounds a day, a Micro pulverizing grinder with a daily capacity of 75,000 pounds, an emulsifying unit with a 3,000 gallon daily capacity, impregnating equipment and a modern laboratory which Plainsman Supply considers more than worth its cost in money it saves in operations and the insurance it provides the customer.

While the commercial fertilizer and an insecticide development were booming, the firm was adding a 170,000 bushel capacity grain elevator, feed grinding machinery, a feed mixer and personnel were being employed to carry on the operations.

The company is proud of the fact that several of its employees who began work with establishment of the business are still on their jobs.

The Micro pulverizer prepares technical DDT and BHC for manufacture of insecticides. The only plant of its kind in this territory, the Micro unit conditions impregnated materials operating with precision and dispatch. A special crew of workmen carry on the operations that keep the supply of materials abreast of the demands.

Plainsman Supply's emulsifying unit was the first of its kind in this part of the country. It is used to impregnate inert material with technical benzene hexachloride and toxaphene. These are used in preparation of concentrates and are applied in the Plains region principally as cotton dusts. The Texas Extension Service recommends and experience among Plains farmers is bearing it out, that cotton dusts should be used on a time schedule as the crop progresses. The former practice of applying insecticides according to infestation count has been found unreliable, say experts who apply the adage of not locking the stable until the horse has been stolen. It doesn't make sense for cotton to have two, or even one, strike against it before measures are taken.

P. J. Reno, Dallas, with the Hercules Powder Co., lent a hand in designing the emulsifying unit. When Plainsman Supply decided to enter this phase of the insecticide business, the operators realized they would have to provide adequate equipment. Economy and efficiency had to be considered in the fast growing firm's plans, so Igo, resorting to his characteristic practice of "If you can't find a way, make one," did just that.

The International Engineering Co. of Dayton, Ohio, made the dust blender, following specifications outlined by the Plainview firm.

The laboratory is installed in the same building as the emulsifying unit. Operated by Claude Cook, chemist and production superintendent, the laboratory makes certain that all insecticides that go out of the plant come up to specifications.

Cook and his equipment play an important role in processing toxaphene, a solid concentrate, as well as other products. Processing toxaphene involves removing the 250 pound masses from their metal containers, cutting them into pieces convenient for handling and placing

Fertilizer AND *Insecticide* PLANT

Inset, Don Cook, in the laboratory, where he tests every batch. The huge trailer is the "Georgia Express" which runs from Plainview to Brunswick.

them in a jacketed steam solution tank. Solution is accomplished by a petroleum solvent, steam heat and agitation.

After complete solution is obtained the liquid is pumped into another tank where an emulsifying agent is added. After other ingredients are mixed in to meet a specified volume, the preparation is complete. Plainsman Supply markets the finished product in five, thirty and fifty gallon metal containers.

Processing DDT, benzene hexachloride and aldrin necessitates impregnating inert material with these chemicals. After the impregnating process, the material is carried into a ribbon blender where it is thoroughly mixed. From the blender, it goes into the pulverizer. There it is ground to a 325 mesh screen. The next and final operation takes place in the dust blender where the insectide is furnished.

In the laboratory a reflex condenser is used in making tests to determine the exact content of products. Every batch of Plainsman manufactured products is tested and samples filed by batch number.

The firm recognizes the fact that the commercial fertilizer and insecticide businesses are only in their infancy in this vast agriculture region. If offered a free, sure-fire growing pains preventative, Plainsman probably would turn it down. Plans are afoot for adding facilities for packaging insecticides and rodent killers in household size cartons. Igo and his personnel are constantly on the alert for opportunities to better serve the needs of the Southwest.

The "Georgia Express" is a huge truck operated by Plainsman Supply between Plainview and Brunswick, Ga. It makes bi-monthly runs to deliver products in Texas, Mississippi, Louisiana and Georgia. On its return trip the Georgia Express delivers a load of technical toxaphene to the Plainsman Supply Company.

Emphasis is on anhydrous ammonia at Plainsman Supply. This type fertilizer has captured the farmers' confidence. As a consequence business has boomed.

With their cotton and wheat history to maintain, farmers are determined to make every acre count. They are fertilizing as never before.

Planisman Supply was operating eleven anhydrous ammonia applicators before the cotton crop was in the ground. A fleet of trucks and pickups equipped with specially constructed tanks transported anhydrous ammonia from the storage base to the fields. Plainsman Supply personnel operate the applicators. Charge of the application is included in the selling price of the fertilizer.

Attachments for applying anhydrous ammonia received their first real tryouts under Plains farming conditions last year. Plainsman Supply cooperates with manufacturers in perfecting equipment. The firm's suggestions in several instances have furthered development of the anhydrous ammonia foot and added valuable safety features.

If applicator machinery continues to improve as it has in recent years, anhydrous ammonia distributors believe that such equipment will eventually be among the "must" machinery for every farmer. Cost of the equipment is already reasonable and Plains farmers are readily learning by observation how to handle anhydrous ammonia and how to apply it by mechanical means.

Plainsman Supply some time ago employed Harry Deaton as its anhydrous ammonia technician. Deaton came to the Plains from the Mississippi Delta where he was connected with development of anhydrous ammonia use. He found about the same

problems here as in the Delta and expects to witness as excellent results in this type of commercial fertilizer pioneering when crops fruit this fall as resulted in other farming areas.

Plainsman Supply uses applicator equipment built by the Gotcher Engineering & Manufacturing Co. at Clarksdale, Mississippi, with which Deaton was at one time associated in development of equipment. Both the tractor mounted and pull type units are in use here.

The four-row applicator was most in use on the Plains for pre-planting and side dressing applications. The knives with the spray attachments fixed to the undersides are used in series of twelve spaced sixteen inches apart for broadcasting on wheat land, or for fertilizing permanent pasture. The twelve-knife unit can cover as much as twelve acres an hour.

Plainsman Supply has equipment for applying anhydrous ammonia to irrigation water. However, they prefer the powered applicator method for several reasons. By using machinery, the amount of application can be determined to within two per cent. If applied in water, the fertilizer goes where the water goes, and some spots of the soil are almost certain to receive more or less fertilizer than others. Conditions of the land, contour and prorosity, also may affect distribution.

The fact that anhydrous ammonia is 82 per cent nitrogen and immediately available in the soil appeals to Plains farmers. Since it does not leach, and retards firing of crops from drouth this fertilizer has a special appeal.

Plainsman Supply receive their shipments in 25-ton tank cars from Dow Chemical Company at Freeport, Texas. From the tank cars the anhydrous ammonia is transferred to huge storage tanks. Plainsman Supply transport trucks deliver the material to applicators at work in fields. The company is supplying dealers over a radius of fifty miles.

Plainsman Supply uses 110 gallon tanks on their applicators and 500 and 1,000 gallon transport containers.

Although the insecticide and commercial fertilizer businesses are easily recognized as the first interest of the firm, Plainsman Supply does not overlook other possibilities of this great irrigation region. Their livestock and poultry feeds attract lots of customers, providing employment for the personnel during seasons when the fertilizer and insecticide trade are at a standstill. Following up these departments, the company sells baby chicks, brooders, poultry remedies, hog feeders and insect sprayers.

The big grain elevator is another source of income. Located a stone's throw from the main building, this part of the business brings in trade during wheat and grain sorghum harvests.

Three salesmen call on customers in Texas, Oklahoma, Louisiana, Arkansas and New Mexico. No fancy merchandising system is maintained. Courtesy, interest in every individual farm problem and a thorough knowledge of Plainsman Supply's merchandise, along with radio and newspaper advertising, are judged to be the best selling requisites.

Plainsman Supply has its manpower problem solved, at least for the foreseeable future. Employes in technical, sales and other key positions are mostly World War II veterans and in case of national emergency some of them probably would be called up, leaving the firm to make out the best it could. Igo feels, however, that with training, men with plenty of initiative make adequate aides.

The status of materials is something else. The firm heads realize that conditions could create a serious shortage but prefer to worry about that when it is a reality.

Igo is a native of Red River County, Texas. Husky and energetic he has the real Texan's ability to meet people and make them like him. He worked his way through Texas A & M College, earning money for his schooling expenses and personal keep. It was indicative of his business ability and hard work that he had fifty dollars in cash to pocket along with his brand new degree in times when fifty dollars was a fair stake.

He came to the Plains as assistant Hale County agriculture agent. He held the post until early in World War II when he volunteered. He served in the Air Force, doing months of transport duty in the Pacific theater. Upon his discharge he returned to his adopted Plains home and went into business.

It was while Igo was assistant county agent that he and K. J. Ed-

PULVERIZED
MASCOT
LIMESTONE

REPRESENTATIVE ANALYSIS

Calcium content —$CaCo_3$ value	52.47%
Magnesium content —$CaCo_3$ value	44.23%
Calcium Carbonate —Equivalence	96.70%

MAGNESIUM LIMESTONE

EACH TON OF MASCOT LIMESTONE CONTAINS ABOUT

3.6 Lbs. Zinc
4.8 Lbs. Sulphur
.75 Lbs. Manganese
.05 Lbs. Copper

American Limestone Co.

Box 2389 Knoxville, Tenn.

wards, then district agriculture agent, became well acquainted. Before Igo was discharged from the Air Force, Edwards took a post as agriculture advisor to the king of Arabia. It was while Edwards was showing the Arabs tricks of American farming that he and Igo perfected plans for the now thriving commercial fertilizer and insecticide business.

Eventually Edwards quit his foreign employment and returned to Texas. He is now a tractor dealer at Hillsboro. Does he deal in anything besides tractors?

Nothing except a complete line of Plainsman Supply Company commercial fertilizers and insecticides.

OKRA

(Continued from page 36)

tablishes a criterion of limitations. There should be available in the soil more than 100 pounds per acre as recorded by soil analysis; otherwise, magnesium deficiency may become a limiting factor in crop production.

Fertilizer

The amount of fertilizer and method of fertilization in okra production in southern Georgia vary from farm to farm. Many of the practices of fertilizer application result from a "rule of thumb" or mythical past practices. Based upon the data shown in Table 1 a fertilization program was established. This information indicates that nitrogen is an important factor in okra production. This information also indicates that secondary elements are important. Therefore two fertilizer mixtures were made, namely, 7-7-7 and a special 7-7-7. The analysis of these fertilizer mixtures are shown in Table 2.

This fertilizer was applied at the rates of 0, 500, 1000, 1500, and 2000 pounds per acre. It was used as interval side-dressings, i.e., all plats except the no treatment received 500 pounds per acre and following this the remainder was applied in 500-pound applications as side-dressing.

TABLE 1

	Pounds per 10 Tons/2							
	Ca	Mg	N	P	Na	K	Mn	Fe
Stalks	27.3	17.7	32.3	14	0.35	27.6	0.14	0.35
Leaves	88.9	11.3	49.6	12	2.66	22.7	2.24	0.63
Pods	12.6	11.6	58.6	23	0.84	61.6	0.14	0.21
Total	128.8	40.6	140.3	49	3.85	111.9	2.52	1.19

TABLE 2

Materials	7-7-7	7-7-7 T.E.
Ammoniated superphosphate (5.6-17.5-0)	600	800
Muriate of potash—60% K_2O	235	235
Sulfate of ammonia—20% N	300	300
Cyanamid—20% N	100	100
Nitrate of soda—16% N	100	100
Kokomeal	100	100
Sand	40	—
Limestone	325	325
Borax	—	10
Manganese sulfate	—	20
Zinc Sulfate	—	5
Copper sulfate	—	5

TABLE 3

	Yield—Tons per Acre				
Pounds per Acre	0	500	1000	1500	2000
Regular 7-7-7	2.05	4.95	5.15	5.80	5.30
Special 7-7-7		4.90	4.45	4.90	5.40

The data shown in Table 3 are from the plats receiving 1000 pounds of dolomitic limestone. It is clearly evident from these data that supplemental applications of fertilizer materials are essential for maximum crop production. A number of fertilizer analyses such as 4-10-6, 5-12-6, 4-12-8 and 5-10-10 have been investigated but a fertilizer mixture compounded on a basis of a 1-1-1 ratio such as 7-7-7 and 10-10-10 more nearly meets the requirements of okra production than some of the other fertilizer mixtures. It might also be cited that supplemental applications of nitrogen in the form of ammonium nitrate, sodium nitrate, anhydrous ammonia and other forms might be desirable.

1 Reynard, G. B. and D. R. Porter. Emerald Okra. Seed World, 67, No. 6: 38,47. 1950.

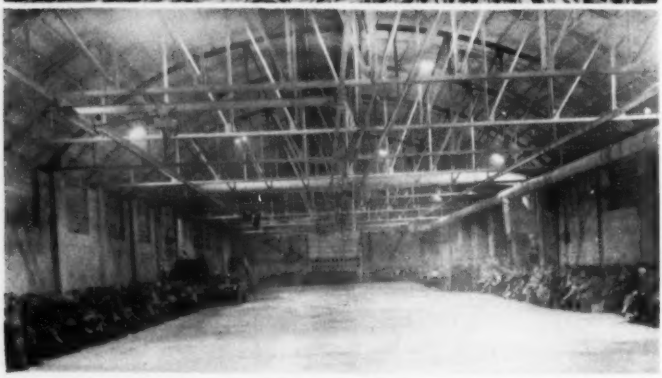
2 Hester, J. B. and F. A. Shelton. Know Your Plant and Soil Requirements. Res. Monograph 3. 1949. Campbell Soup Co.

Textile Bag Survey Results Available

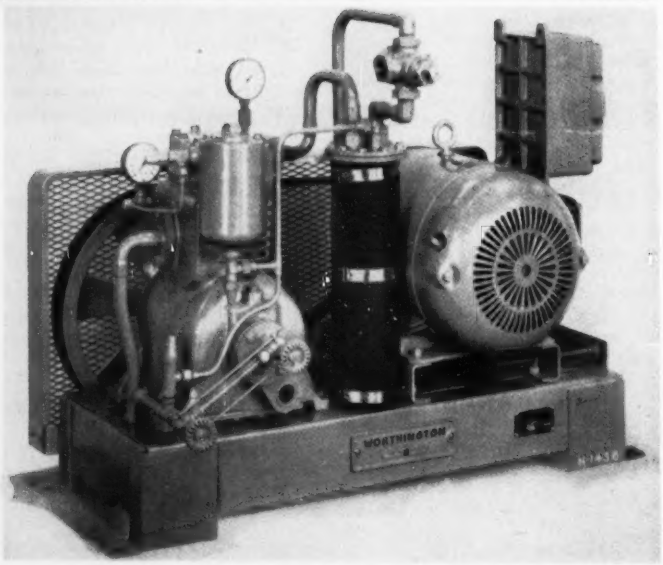
The Textile Bag Manufacturers Association has made a survey of a thousand fertilizer manufacturers to get their opinions on the subject of bags for fertilizers. The survey covered a number of points, such as stacking, storage, display value, acceptance by consumers, etc., and elicited interesting comments from many concerns.

These responses have been tabulated, and the comments reproduced for the information of the industry, and the whole report may be secured by writing the association headquarters at 611 Davis Street, Evanston, Illinois.

Here are the three men who guided the Third Annual Houston Area Pasture Conference, during which the seed and fertilizer dealers of Houston, Texas, played hosts to 500 Gulf Coast farmers and ranchers. An impressive array of specialists spoke on development, improvement and maintenance of pastures. The top brass above, up to their knees in their subject, are George Rosener of Station KTRH, who was mc; Dr. Arthur Smith, Chief agronomist of Mathieson Chemical and Jerry Ehlert, chairman.



Dancing and free entertainment for the entire surrounding community was provided by Baughman Manufacturing Company, Jerseyville, Illinois, when they dedicated their newest and largest factory. Here is a picture which shows some of the 3000 neighbors who came to the party. The new plant contains 16,000 square feet of floor space, and brings to a total of 100,000 the square feet of manufacturing assembly and storage facilities under cover at Libertyville.



This is the new LPG-A compressor to transfer anhydrous ammonia from tank car to storage which has been announced by Worthington Pump and Machinery Corporation, Harrison, N. J. It not only transfers the ammonia, but also the residual vapors, which often represent from 800 to 1200 gallons left in the car.

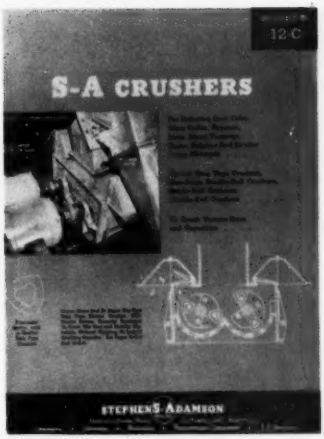
They have issued a bulletin, H-609-B1 which tells the story of the pump, and how much residual vapor is left in a 10,000 gallon tank car when inefficient pumps are used. They will gladly send you this bulletin if you will write for it on your company letterhead.

Bemis Research Development Department

The Bemis Bro. Bag Co. has established a new Research and Development Department to coordinate and extend its present activities in package design and engineering. H. V. Kindseth, newly appointed Supervisor of Research and Development, will direct the department which is located in Minneapolis.

Bemis has long been active in package design and service and the new department has been created to offer industry even better service in face of the rapid strides made in the packaging field in the past several years. The Research and Development Department will be completely independent of Packaging Service, a Bemis department which for several years has devoted itself to improving packing techniques and machinery.

Mr. Kindseth, a graduate of the University of Minnesota, has been with Bemis since 1931. Prior to his new appointment he was engaged in machinery design and development work in Bemis Packaging Service.



Stephens-Adamson Mfg. Co., Aurora, Illinois; Los Angeles of Belleville, Ontario will send you this bulletin on crushers if you will write them asking for Bulletin 12-C. This bulletin covers their complete line of crushers, including their newest, a double rotor Knittel crusher for sticky materials.

International Paper Plans Employee Stock Option

An incentive stock option plan for key employees of the International Paper Company has been recommended by the Board of Directors for approval by the stockholders at the annual meeting of the company on May 14, it was announced March 25 by J. H. Hinman, President.

The plan, which is designed to provide a means of tying key employees more closely to the company by giving them a more direct interest in the success of the corporation, provides for granting options on a total of 250,000 shares of presently authorized but unissued common stock—less than 3 percent of the shares presently outstanding.

Mr. Hinman stated today that the plan applies not only to those executives whose knowledge, experience and ability have been primarily responsible for the success of present operations but also — and still more important—to the younger men on whom the success of operations will depend in the future.

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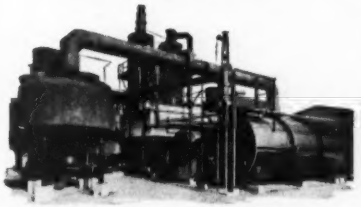

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